ICONES PLEUROTHALLIDINARUM
XXVIII

A RECONSIDERATION OF MASDEVALLIA
SYSTEMATICS OF SPECKLINIA

and vegetatively similar taxa

(Orchidaceae)

Missouri Botanical Garden

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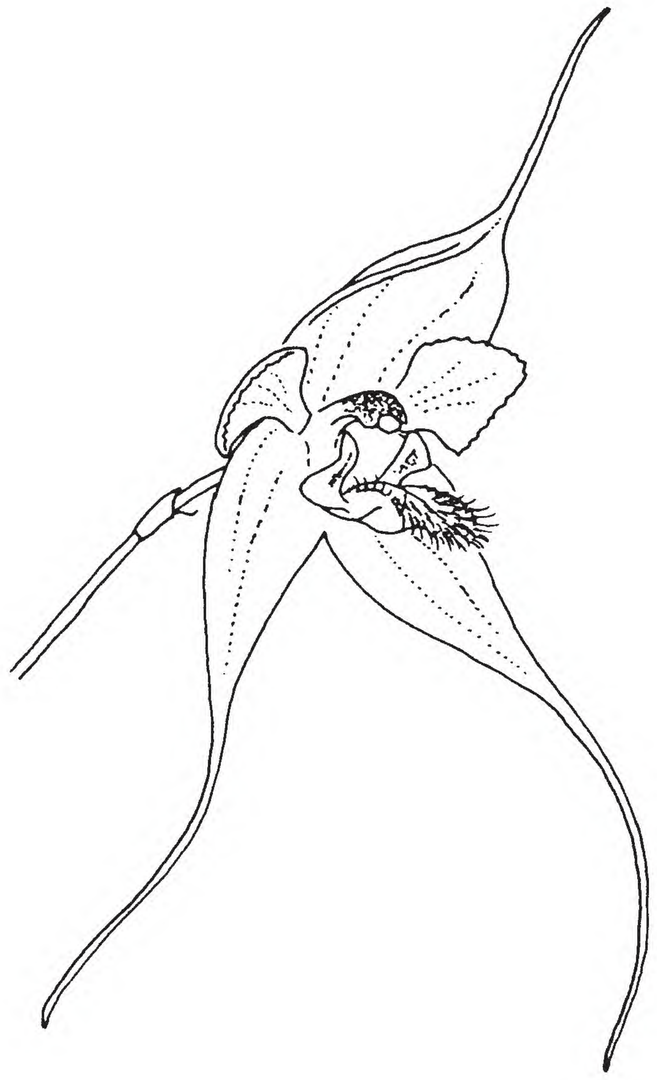
MISCELLANEOUS NEW TAXA IN THE PLEUROTHALLLID GENERA *ACIANTHERA, ACRONIA, ARTHROSIA, COLOMBIANA, CROCODEILANTHE, DRACULA, DRYADELLA, LODDIGESIA, MASDEVALLIA, MYOXANTHUS, OGYGIA, PLATYSTELE, PORROGLOSSUM, RESTREPIA* and *TRICHOSALPINX*



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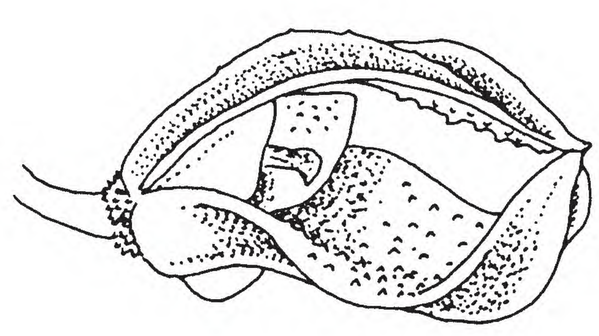

Panmorphia rabei (Foldats) Luer, collected in Venezuela by Raymond McCullough in 1967, cultivated and photographed by Lynn O'Shaughnessy in Howell, Michigan, in 2006.

A RECONSIDERATION OF *MASDEVALLIA* (ORCHIDACEAE)

ABSTRACT

Because of marked morphological differences among some of the subgenera of *Masdevallia* Ruiz & Pav., recognition at the generic level is proposed.

New genera:

Acinopetala Luer
Alaticaulia Luer
Buccella Luer
Byrcella Luer
Fissia (Luer) Luer
Luzama Luer
Megema Luer
Petalodon Luer
Pteroon Luer
Regalia Luer
Reichantha Luer
Spectaculum Luer
Spilotantha Luer
Streptoura Luer
Triotosiphon (Schltr.) ex Luer
Zahleria Luer

The neotropical genus *Masdevallia* Ruiz & Pav. is massive. It is a large and beloved assortment of over 500 species that are classed into numerous distinct subdivisions (Luer, 2000a, 2000b, 2001, 2002, 2003). To many of its devotees, amateur and professional alike, its dismemberment into smaller genera would amount to nothing less than heresy. Many taxa have been hiding under the blanket of *Masdevallia*. In spite of the consternation to be invoked, be that as it may, differences in morphology and DNA do exist, and some genera are hereby recognized. However, the majority of species remain in the sections of *Masdevallia*. Although still incomplete, recent DNA analyses (Abele et al., 2005) have shed some light on some relationships of the following proposed genera.

KEY TO THE GENERA

1 Lip undivided, with or without calli 2
1' Lip divided by marginal folds into two parts, an epichile and a hypochile 17

2 Rhizome elongated, plant repent; raceme successive with red-orange flowers; lateral sepals tailless..... *Spectaculum*
2' Rhizome abbreviated, plant caespitose 3

3 Ovary variously ornamented 4
3' Ovary not ornamented, but may have low carinae or ribs.....6

4 Ovary spiculate to long-papillose..... *Diodonopsis*
4' Ovary carinate or crested 5

5 Ovary carinate with short papillae extending onto the bases of the sepals..... ..... *Luzama*
5' Ovary with crests overlapping the bases of the sepals..... *Pteroon*

6 Inflorescence 1-flowered 7
6' Inflorescence simultaneously or successively flowered.....11

7 Sepals deeply connate into a tube constricted above the middle..... *Tirtosiphon*
7' Sepals variously connate 8

8 Petals with a marginal callus ending in a basal process of various shapes and sizes ..... *Masdevallia*
8' Petals not with a marginal callus ending in a basal process.....9

9 Petals with a small process above or along the margin between the middle and basal third ..... *Acinopetala*
9' Petals without a protruding process 10

10 Lip thick, verrucose at the apex ..... *Byrsella*
10' Lip thin, smooth, or microscopicallly verrucose at the apex..... *Reichantha*

11 Sepals free, with the bases of the lateral sepals forming a shallow cup with a curved column-foot; lip entire, or with ill-defined marginal folds..... *Rodrigoa*
11' Sepals variously connate 12

12 Petals with 2 distinct, or 2 joined, descending processes..... *Petalodon*
12' Petals without 2 distinct or joined descending processes.....13

13 Sepals thickly rigid; lip thick, verrucose at the apex, with concavities at the base.. ..... *Regalia*
13' Sepals and lip not as above 14

14 Peduncle thin, prostrate, horizontal or ascending.....15
14' Peduncle stout, strict, erect.....16

15 Petals with a longitudinal callus on the lower half ending in a retrorse process..... ..... *Zahleria*
15' Petals without a protruding callus..... *Luzama*

16 Petals thick without a protruding process..... *Reichantha*
16' Petals with a small process above or along the margin between the middle and basal third ..... *Acinopetala*

17 Inflorescence 1-flowered 18
17' Inflorescence simultaneously or successively flowered.....21

18 Floral bract inflated, engulfing the pedicel and ovary; petals with the tips verrucose ..... *Megema*
18' Petals not verrucose at the apex 19

19 Ovaries with tortuous, undullating lamellae; sepals nearly free; petals sharply tridentate..... *Fissia*
19' Not as above.....20

20 Ovaries carinate-crested; sepals connate into a tube inflated below the middle with a long, curved, column-foot..... *Buccella*
20' Ovaries carinate; sepals carinate within, with thick, twisted tails..... *Streptoura*

21 Peduncle triquetrous ..... *Alaticaulia*
21' Peduncle terete 22

22 Ovary usually carinate; floral bract usually inflated; sepals membranous..... ..... *Spilotantha*
22' Ovary not carinate; floral bract not inflated; sepals fleshy-rigid..... *Alaticaulia*

ACINOPETALA

Acinopetala Luer, gen. nov.

Type: *Masdevallia minuta* Lindl., Ann. Mag. Nat. Hist. 12: 396, 1842 [=*Acinopetala minuta* (Lindl.) Luer].

Ety.: From the Greek *akis* and *petalon*, "a petal with a point," referring to the callus on the petal.

Syn.: *Masdevallia* sect. *Minutae* Rchb.f. ex Woolward, The Genus *Masdevallia*, sect. VI, 1896.
Type: *Masdevallia minuta* Lindl.

Syn.: *Masdevallia* sect. *Floribundae* Kraenzl., Repert. Spec. Nov. Regni Veg. Beih. 34: 84, 1925.
Type: *Masdevallia floribunda* Limdl., Edwards's Bot. Reg. 29: Misc. 72, 1843 [=*Acinopetala floribunda* (Lindl.) Luer].

Plantae parvulae vel mediocres. Pedunculus teres uni- vel pauciflorus. Petala oblonga callo infra-medium apiculato. Labellum oblongum bicallosum.

This genus of about 18 species is distributed from Mexico in the North, to the Guianas in the East, and to Bolivia in the South. It is distinguished by a caespitose habit; a single-flowered or a successively flowered raceme, save two species with two simultaneous flowers [*Acinopetala chontalensis* (Rchb.f.) Luer, and *Acinopetala geminiflora* (P.Ortiz) Luer], that is borne by a terete peduncle; sepals connate into a tube or cup; petals oblong, callous on the lower half with a short, usually acute process below the middle (absent in *Acinopetala adamsii*); and an oblong lip with a longitudinal pair of calli on or above the middle third.

Acinopetala is related to sympatric *Reichantha* Luer which is usually vegetatively and florally larger with oblong, callous petals without a process, either medially or basally, and with an oblong lip with subdued calli. Because of the distinct callus of the petal, *Masdevallia schizopetala* (Luer) has been received as a transfer from *Masdevallia* sect. *Zahlbrucknerae* Luer.

Acinopetala adamsii (Luer) Luer, comb. nov.
Bas.: *Masdevallia adamsii* Luer, Lindleyana 9: 243, 1994.
Acinopetala arangoi (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia arangoi* Luer & R.Escobar, Orquideología 13: 149, 1979.
Acinopetala attenuata (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia attenuata* Rchb.f., Gard. Chron. 834, 1871.
Acinopetala chontalensis (Rchb. f.) Luer, comb. nov.
Bas.: *Masdevallia chontalensis* Rchb. f., Otia Bot. Hamburgensia 1: 17, 1878.
Acinopetala crescenticola (Lehm. & Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia crescenticola* Lehm. & Kraenzl., Repert. Spec. Nov. Regni Veg. 17: 428, 1921.
Acinopetala flaveola (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia flaveola* Rchb.f., Gard. Chron. n.s., 21: 638, 1884.
Acinopetala floribunda (Lindl.) Luer, comb. nov.
Bas.: *Masdevallia floribunda* Lindl., Bot. Reg. 29: Misc. 72, 1843.
Acinopetala geminiflora (P. Ortiz) Luer, comb. nov.
Bas.: *Masdevallia geminiflora* P. Ortiz, Orquideología 14: 226, 1981.
Acinopetala gutierrezii (Luer) Luer, comb. nov.
Bas.: *Masdevallia gutierrezii* Luer, Phytologia 42: 461, 1979.
Acinopetala herradurae (Lehm. & Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia herradurae* Lehm. & Kraenzl., Bot. Jahrb. Syst. 26: 455, 1899.
Acinopetala laucheana (Woolward) Luer, comb. nov.
Bas.: *Masdevallia laucheana* Woolward, Monogr. *Masdevallia* t. 19, 1896.
Acinopetala livingstoneana (Rchb.f. & Roezl) Luer, comb. nov.
Bas.: *Masdevallia livingstoneana* Rchb.f. & Roezl, Gard. Gard. Chron. n.s., 4: 290, 1875.
Acinopetala minuta (Lindl.) Luer, comb. nov.
Bas.: *Masdevallia minuta* Lindl., Ann. Mag. Nat. Hist. 12: 396, 1843.
Acinopetala nicaraguae (Luer) Luer, comb. nov.
Bas.: *Masdevallia nicaraguae* Luer, Selbyana 5: 148, 1979.
Acinopetala pescadoënsis (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia pescadoënsis* Luer & R.Escobar, Orquideología 13: 179, 1979.
Acinopetala scabrilinguis (Luer) Luer, comb. nov.
Bas.: *Masdevallia scabrilinguis* Luer, Phytologia 44: 168, 1979.
Acinopetala schizopetala (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia schizopetala* Kraenzl., Bull. Misc. Inform. 101, 1925.
Acinopetala tokachiorum (Luer) Luer, comb. nov.
Bas.: *Masdevallia tokachiorum* Luer, Lindleyana 6: 90, 1991.
Acinopetala tubuliflora (Ames) Luer, comb. nov.
Bas.: *Masdevallia tubuliflora* Ames, Orchidaceae 2: 265, et 3: 48, 1908.
Acinopetala wendlandiana (Rchb. f.) Luer, comb. nov.
Bas.: *Masdevallia wendlandiana* Rchb. f., Gard. Chron. ser. 1: 174, 1887.

ALATICAULIA

Alaticaulia Luer, gen. nov.

Type: *Masdevallia melanoxantha* Linden & Rchb.f., Bonplandia 2: 283, 1854 [=*Alaticaulia melanoxantha* (Linden & Rchb.f.) Luer].

Syn.: *Masdevallia* Ruiz & Pav. sect. *Polyanthae* Rchb.f., Gard. Chron. n.s., 1: 372, 1874, *pro parte*.

Type: *Masdevallia polyantha* Linden ex Lindl., Orch. Linden. 6, 1846 [=*Masdevallia schlimii* Linden ex Lindl., Orch. Linden. 5, 1846].

Syn.: *Masdevallia* sect. *Alaticaules* Kraenzl., Repert. Spec. Nov. Regni Veg. Beih. 34: 105, 1925.

Lectotype designated by Luer, 1986: 43: *Masdevallia melanoxantha* Linden & Rchb.f.

Syn.: *Masdevallia* subgen. *Polyantha* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 77: 11, 2000.

Type: *Masdevallia polyantha* Linden ex Lindl., Orch. Linden. 6, 1846 [=*Masdevallia schlimii* Linden ex Lindl., Orch. Linden. 5, 1846].

Plantae parvae grandesve. Pedunculus triquetrus teresve racemosus. Sepala caudata in cupulam tubumve connata. Calli petalorum non protuberantes. Labellum per plicas divisum.

Reichenbach recognized the section *Polyanthae* of *Masdevallia* in 1874. From this section, Kränzlin segregated section *Alaticaules* in 1925, distinguishing the species with triquetrous peduncles from those with terete peduncles. Because of distinct, morphological characters, they were elevated together to subgenus *Polyantha* (Luer, 2000a, 77: 11).

This is a large genus of more than 110 species mostly from northwestern South America of small to large plants with thickly coriaceous leaves; a successively or simultaneously flowered raceme with a terete or triquetrous peduncle; sepals caudate, connate into a cup or tube; petals usually callous along the lower half with a rounded callus at the base, with few exceptions, e.g. *Alaticaulia odontopetala* (Luer) Luer; and a lip divided into an epichile and a hypochile by marginal folds.

Alaticaulia acrochordonia (Rchb.f.) C. Luer, comb. nov.
Bas.: *Masdevallia acrochordonia* Rchb.f., Xenia Orchidaceae 2: 213, 1874.

Alaticaulia adrianae (Luer) Luer, comb. nov.
Bas.: *Masdevallia adrianae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 72: 110, 1998.

Alaticaulia aenigma Luer & R.Escobar, Selbyana 7: 69, 1982.
Bas.: *Masdevallia aenigma* Luer & R.Escobar, Selbyana 7: 69, 1982.

Alaticaulia aguirrei (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia aguirrei* Luer & R.Escobar, Harvard Papers in Botany 9: 1, 1996.

Alaticaulia ametroglossa (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia ametroglossa* Luer & Hirtz, Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 91: 29a, 2002.

Alaticaulia amplexa (Luer) Luer, comb. nov.
Bas.: *Masdevallia amplexa* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 125, 1997.

Alaticaulia anfracta (Königer) Luer, comb. nov.
Bas.: *Masdevallia anfracta* Königer, Arcula 4: 96, 1995.

Alaticaulia barrowii (Luer) Luer, comb. nov.
Bas.: *Masdevallia barrowii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Alaticaulia bennettii (Luer) Luer, comb. nov.
Bas.: *Masdevallia bennettii* Luer, Lindleyana 6: 84, 1991.

Alaticaulia bicolor (Poepp. & Endl.) Luer, comb. nov.
Bas.: *Masdevallia bicolor* Poepp. & Endl., Nov. Gen. et Spec. 2: 6, t. 108, 1838.

Alaticaulia brachyantha (Schltr.) Luer, comb. nov.
Bas.: *Masdevallia brachyanhtha* Schltr., Repert. Spec. Nov. Regni Veg. 27: 37, 1929.

Alaticaulia brachyura (Lehm. & Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia brachyura* Lehm. & Kraenzl., Bot. Jahrb. Syst. 26: 453, 1899.

Alaticaulia brenneri (Luer) Luer, comb. nov.
Bas.: *Masdevallia brenneri* Luer, Phytologia 39: 190, 1978.

Alaticaulia bryophila (Luer) Luer, comb. nov.
Bas.: *Masdevallia bryophila* Luer, Harvard Papers in Botany 9: 1, 1996.

Alaticaulia buccinator (Rchb.f. & Warsz.) Luer, comb. nov.
Bas.: *Masdevallia buccinator* Rchb.f. & Warsz., Bonplandia 2: 115, 1854.

Alaticaulia calagrasalis (Luer) Luer, comb. nov.
Bas.: *Masdevallia calagrasalis* Luer, Phytologia 57: 61, 1985.

Alaticaulia cardiantha (Königer) Luer, comb. nov.
Bas.: *Masdevallia cardiantha* Königer, Die Orchidee 31: 113, 1980; emend. 36: 87, 1985.

Alaticaulia carolloi (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia carolloi* Luer & Andreetta, Phytologia 46: 348, 1980.

Alaticaulia carruthersiana (Lehm. & Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia carruthersiana* Lehm. & Kraenzl., Bull. Misc. Inform. 99, 1925.

Alaticaulia cinnamomea (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia cinnamomea* Rchb.f., Bonplandia 3: 225, 1855.

Alaticaulia cocapatae (Luer, Teague & R.Vásquez) Luer, comb. nov.
Bas.: *Masdevallia cocapatae* Luer, Teague & R.Vásquez, Harvard Papers in Botany 2: 55,

Alaticaulia concinna (Königer) Luer, comb. nov.
Bas.: *Masdevallia concinna* Königer, Die Orchidee 33: 101, 1982; emend. 36: 87, 1985.

Alaticaulia cosmia (Königer & Sijm) Luer, comb. nov.
Bas.: *Masdevallia cosmia* Königer & Sijm, Arcula 8: 223, 1999.

Alaticaulia cuprea (Lindl.) Luer, comb. nov.
Bas.: *Masdevallia cuprea* Lindl., Edwards's Bot. Reg. 29: Misc, 81, 1843.

Alaticaulia curtipes (Barb.Rodr.) Luer, comb. nov.
Bas.: *Masdevallia curtipes* Barb.Rodr., Gen. Spec. Orch. Nov. 2: 95, 1882.

Alaticaulia deceptrix (Luer & Würstle) Luer, comb. nov.
Bas.: *Masdevallia deceptrix* Luer & Würstle, Thesaurus Masdevalliarum 10: 4, 1984.

Alaticaulia descendens (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia descendens* Luer & Andreetta, Lindleyana 3: 195, 1988.
Alaticaulia discoidea (Luer & Würstle) Luer, comb. nov.
Bas.: *Masdevallia discoidea* Luer & Würstle, Lindleyana 1: 182, 1986.
Alaticaulia don-quijote (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia don-quijote* Luer & Andreetta, Phytologia 59: 61, 1985.
Alaticaulia dorisiae (Luer) Luer, comb. nov.
Bas.: *Masdevallia dorisiae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 149, 1999.
Alaticaulia draconis (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia draconis* Luer & Andreetta, Lindleyana 3: 21, 1988.
Alaticaulia dunstervillei (Luer) Luer, comb. nov.
Bas.: *Masdevallia dunstervillei* Luer, Selbyana 7: 106, 1982.
Alaticaulia echo (Luer) Luer, comb. nov.
Bas.: *Masdevallia echo* Luer, Phytologia 39: 198, 1978.
Alaticaulia empusa (Luer) Luer, comb. nov.
Bas.: *Masdevallia empusa* Luer, Phytologia 39: 200, 1978.
Alaticaulia eumeces (Luer) Luer, comb. nov.
Bas.: *Masdevallia eumeces* Luer, Lindleyana 4: 111, 1989.
Alaticaulia excelsior (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia excelsior* Luer & Andreetta, Selbyana 5: 393, 1981.
Alaticaulia fosterae (Luer) Luer, comb. nov.
Bas.: *Masdevallia fosterae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 150, 1999.
Alaticaulia frilehmannii (Luer & R.Vásquez) comb. nov.
Bas.: *Masdevallia frilehmannii* Luer & R.Vásquez, Rev. Soc. Bol. Bot. 3: 39, 2001.
Alaticaulia garciae (Luer) Luer, comb. nov.
Bas.: *Masdevallia garciae* Luer, Selbyana 7: 109, 1982.
Alaticaulia guerrieroi (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia guerrieroi* Luer & Andreetta, Selbyana 2: 373, 1978.
Alaticaulia guttulata (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia guttulata* Rchb.f., Linnaea 41: 118, 1877, non Rolfe, 1890.
Alaticaulia helgae (Königer & J.J.Portilla) Luer, comb. nov.
Bas.: *Masdevallia helgae* Königer & J.J.Portilla, Arcula 7: 194, 1997.
Alaticaulia impostor (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia impostor* Luer & R.Escobar, Orquideología 13: 166, 1979.
Alaticaulia infracta (Lindl.) Luer, comb. nov.
Bas.: *Masdevallia infracta* Lindl., Gen. Spec. Orchid. 3: 193, 1833.
Alaticaulia ingridiana (Luer & J.J.Portilla) Luer, comb. nov.
Bas.: *Masdevallia ingridiana* Luer & J.J.Portilla, Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 82: 105a, 2000.
Alaticaulia isos (Luer) Luer, comb. nov.
Bas.: *Masdevallia isos* Luer, Phytologia 42: 463, 1979.
Alaticaulia jarae (Luer) Luer, comb. nov.
Bas.: *Masdevallia jarae* Luer, Harvard Papers in Botany, 9: 4, 1996.
Alaticaulia kuhniorum (Luer) Luer, comb. nov.
Bas.: *Masdevallia kuhniorum* Luer, Phytologia 39: 208, 1978, as *kuhnorum*.
Alaticaulia lata (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia lata* Rchb.f., Gard. Chron. n.s., 7: 653, 1877.
Syn.: *Masdevallia borucana* P.H. Allen, Ceiba 3: 14, 1952.
Alaticaulia lenae (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia lenae* Luer & Hirtz, Lindleyana 6: 87, 1991.
Syn.: *Masdevallia gracilior* Königer & J.Portilla.
Alaticaulia lintricula (Königer) Luer, comb. nov.
Bas.: *Masdevallia lintricula* Königer, Die Orchidee 37: 106, 1986.
Alaticaulia loui (Luer & Dalström) comb. nov.
Bas.: *Masdevallia loui* Luer & Dalström, Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 91: 113a, 2002.
Alaticaulia luziae-mariae (Luer & R.Vásquez) comb. nov.
Bas.: *Masdevallia luziae-mariae* Luer & R.Vásquez, Rev. Soc. Bol. Bot. 3: 41, 2001.
Alaticaulia maculata (Klotzsch & H.Karst.) Luer, comb. nov.
Bas.: *Masdevallia maculata* Klotzsch & H.Karst., Allg. Gartenzeitung 15: 330, 1847.
Alaticaulia martineae (Luer) Luer, comb. nov.
Bas.: *Masdevallia martineae* Luer, Harvard Papers in Botany 2: 55, 1997.
Alaticaulia martiniana (Luer) Luer, comb. nov.
Bas.: *Masdevallia martiniana* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 65: 108, 1998.
Alaticaulia mascarata (Luer & R.Vásquez) Luer, comb. nov.
Bas.: *Masdevallia mascarata* Luer & R.Vásquez, Novon 2: 6, 1992.
Alaticaulia mayaycu (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia mayaycu* Luer & Hirtz, Lindleyana 3: 201, 1988.
Alaticaulia medusa (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia medusa* Luer & R.Escobar, Selbyana 7: 72, 1982.
Alaticaulia melanoxantha (Linden & Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia melanoxantha* Linden & Rchb.f., Bonplandia 2: 283, 1854.
Alaticaulia menatoi (Luer & R.Vásquez) Luer, comb. nov.
Bas.: *Masdevallia menatoi* Luer & R.Vásquez, Phytologia 46: 351, 1980.
Alaticaulia mezae (Luer) Luer, comb. nov.
Bas.: *Masdevallia mezae* Luer, Phytologia 44: 166, 1979.
Alaticaulia monogona (Königer) Luer, comb. nov.
Bas.: *Masdevallia monogona* Königer, Die Orchidee 36: 82, 1985.
Alaticaulia munae (Luer & Barrow) Luer, comb. nov.
Bas.: *Masdevallia munae* Luer & Barrow, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 291, 2005.
Alaticaulia navicularis (Garay & Dunst.) Luer, comb. nov.
Bas.: *Masdevallia navicularis* Garay & Dunst., Venezuelan Orchids Illustr. 6: 232, 1976.
Alaticaulia norae (Luer) Luer, comb. nov.
Bas.: *Masdevallia norae* Luer, Lindleyana 3: 44, 1988.
Alaticaulia obscurans (Luer) Luer, comb. nov.
Bas.: *Masdevallia obscurans* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 72: 112, 1998.
Alaticaulia odontopetala (Luer) Luer, comb. nov.
Bas.: *Masdevallia odontopetala* Luer, Phytologia 39: 215, 1978.
Alaticaulia omorenoi (Luer & R.Vásquez) Luer, comb. nov.
Bas.: *Masdevallia omorenoi* Luer & R.Vásquez, Harvard Papers in Botany 2: 58, 1997.
Alaticaulia oreas (Luer & R.Vásquez) Luer, comb. nov.
Bas.: *Masdevallia oreas* Luer & R.Vásquez, Selbyana 5: 395, 1981.
Alaticaulia oscitans (Luer) Luer, comb. nov.
Bas.: *Masdevallia oscitans* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 72: 112, 1998.
Alaticaulia pastinata (Luer) Luer, comb. nov.
Bas.: *Masdevallia pastinata* Luer, Harvard Papers in Botany 2: 58, 1997.
Alaticaulia patchicutzae (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia patchicutzae* Luer & Hirtz, Lindleyana 10: 123, 1995.
Alaticaulia phoebe (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia phoebe* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 295, 2005.
Alaticaulia phoenix (Luer) Luer, comb. nov.
Bas.: *Masdevallia phoenix* Luer, Phytologia 39: 222, 1978.
Alaticaulia pinocchio (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia pinocchio* Luer & Andreetta, Phytologia 39: 224, 1978.
Alaticaulia plynophora (Luer) Luer, comb. nov.
Bas.: *Masdevallia plynophora* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 91: 149a, 2002.
Alaticaulia portillae (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia portillae* Luer & Andreetta, Selbyana 2: 378, 1978.
Alaticaulia posadae (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia posadae* Luer & R.Escobar, Selbyana 7: 74, 1982.

Alaticaulia priscillana (Luer & V.N.M.Rao) Luer, comb. nov.
Bas.: *Masdevallia priscillana* Luer & V.N.M.Rao, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 297, 2005.
Alaticaulia proboscoidea (Luer & V.N.M.Rao), comb. nov.
Bas.: *Masdevallia proboscoidea* Luer & V.N.M.Rao, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 251, 2004.
Alaticaulia prolixa (Luer) Luer, comb. nov.
Bas.: *Masdevallia prolixa* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 82: 155a, 2000.
Alaticaulia prosartema (Königer) Luer, comb. nov.
Bas.: *Masdevallia prosartema* Königer, Die Orchidee 32: 68, 1981; emend. 36: 87, 1985.
Alaticaulia pyxis (Luer) Luer, comb. nov.
Bas.: *Masdevallia pyxis* Luer, Phytologia 39: 236, 1978.
Alaticaulia receptrix (Luer & R.Vásquez) Luer, comb. nov.
Bas.: *Masdevallia receptrix* Luer & R.Vásquez, Phytologia 54: 383, 1983.
Alaticaulia rechingeriana (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia rechingeriana* Kraenzl., Repert. Spec. Nov. Regni Veg. 17: 424, 1921.
Alaticaulia recurvata (Luer & Dalström) Luer, comb. nov.
Bas.: *Masdevallia recurvata* Luer & Dalström, Lindleyana 11: 182, 1996.
Alaticaulia revoluta (Königer) Luer, comb. nov.
Bas.: *Masdevallia revoluta* Königer, Arcula 2: 40, 1994.
Alaticaulia richardsoniana (Luer) Luer, comb. nov.
Bas.: *Masdevallia richardsoniana* Luer, Lindleyana 3: 55, 1988.
Alaticaulia rolandorum (Luer & Sijm) Luer, comb. nov.
Bas.: *Masdevallia rolandorum* Luer & Sijm, Monogr. Syst. Bot. Missouri Bot. Gard. 91: 165a, 2002.
Alaticaulia sanctae-fidei (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia sanctae-fidei* Kraenzl., Repert. Spec. Nov. Regni Veg. Beih. 17: 414, 1921.
Alaticaulia sanguinea (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia sanguinea* Luer & Andreetta, Phytologia 47: 69, 1980.
Alaticaulia sceptrum (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia sceptrum* Rchb.f., Bonplandia 1: 283, 1854.
Alaticaulia schlimii (Linden ex Lindl.) Luer, comb. nov.
Bas.: *Masdevallia schlimii* Linden ex Lindl., Orch. Linden. 5, 1846.
Alaticaulia schudelii (Luer) Luer, comb. nov.
Bas.: *Masdevallia schudelii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 157, 1999.
Alaticaulia scitula (Königer) Luer, comb. nov.
Bas.: *Masdevallia scitula* Königer, Die Orchidee 32: 68, 1981.
Alaticaulia scobina (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia scobina* Luer & R.Escobar, Selbyana 7: 75, 1982.
Alaticaulia serendipita (Luer & Teague) Luer, comb. nov.
Bas.: *Masdevallia serendipita* Luer & Teague, Lindleyana 8: 53, 1993.
Alaticaulia sernae (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia sernae* Luer & R.Escobar, Orquideología 13: 183, 1979.
Alaticaulia sprucei (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia sprucei* Rchb.f., Otia Bot. Hamburgensia 1: 17, 1878.
Alaticaulia stenorhynchos (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia stenorhynchos* Kraenzl., Notizbl. Bot. Gart. Berlin-Dahlem 8: 130, 1922.
Alaticaulia stirpis (Luer) Luer, comb. nov.
Bas.: *Masdevallia stirpis* Luer, Lindleyana 4: 122, 1989.
Alaticaulia synthesis (Luer) Luer, comb. nov.
Bas.: *Masdevallia synthesis* Luer, Lindleyana 8: 55, 1993.
Alaticaulia telloi (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia telloi* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 301, 2005.
Alaticaulia theleüra (Luer) Luer, comb. nov.
Bas.: *Masdevallia theleüra* Luer, Phytologia 47: 70, 1980.
Alaticaulia torulosa (Königer & J.J.Portilla) Luer, comb. nov.
Bas.: *Masdevallia torulosa* Königer & J.J.Portilla, Arcula 4: 104, 1995.
Alaticaulia tovarensis (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia tovarensis* Rchb.f., Linnaea 22: 818, 1849.
Alaticaulia trochilus (Linden & André) Luer, comb. nov.
Bas.: *Masdevallia trochilus* Linden & André, Gard. Chron. 33: 711, 1873.
Alaticaulia tsubotae (Luer) Luer, comb. nov.
Bas.: *Masdevallia tsubotae* Luer, Lindleyana 9: 114, 1994.
Alaticaulia vargasii (C.Schweinf.) Luer, comb. nov.
Bas.: *Masdevallia vargasii* C.Schweinf., Amer. Orchid Soc. Bull. 19: 34, 1950.
Syn.: *Masdevallia richteri* Pabst, Bradea 2: 52, 1975.
Alaticaulia venus (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia venus* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 82: 207a, 2000.
Alaticaulia virens (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia virens* Luer & Andreetta, Phytologia 47: 71, 1980.
Alaticaulia virgo-cuencae (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia virgo-cuencae* Luer & Andreetta, Phytologia 39: 232, 1978.
Alaticaulia vomeris (Luer) Luer, comb. nov.
Bas.: *Masdevallia vomeris* Luer, Harvard Papers in Botany 2: 64, 1997.
Alaticaulia weberbaueri (Schltr.) Luer, comb. nov.
Bas.: *Masdevallia weberbaueri* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 9: 62, 1921.
Alaticaulia whiteana (Luer) Luer, comb. nov.
Bas.: *Masdevallia whiteana* Luer, Phytologia 39: 234, 1978.
Alaticaulia wuerstlei (Luer) Luer, comb. nov.
Bas.: *Masdevallia wuerstlei* Luer, Monogr. Syst. Bot. Missouri Bot. Gard, 76: 154, 1999.
Alaticaulia xylina (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia xylina* Rchb.f., Bot. Zeitung (Berlin) 31: 390, 1873.
Alaticaulia zumbae (Luer) Luer, comb. nov.
Bas.: *Masdevallia zumbae* Luer, Lindleyana 8: 61, 1993.

BUCCELLA

Buccella Luer, gen. nov.

Type: *Masdevallia nidifica* Rchb.f., Otia Bot. Hamburgensia 1: 18, 1878 [=*Buccella nidifica* (Rchb.f.) Luer].

Ety.: From the Latin *bucca*, "a cheek," hence "little cheek," referring to the dilated lateral sepals.

Syn.: *Masdevallia* sect. *Nidificae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 12, 1986.

Syn.: *Masdevallia* subgen. *Nidificia* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 77: 10, 2000.

Syn.: *Masdevallia* sect. *Ophioglossae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 15, 1986.

Type: *Masdevallia ophioglossa* Rchb.f., Otia Bot. Hamburgensia 1: 17, 1878 [=*Buccinella ophioglossoides* (Rchb.f.) Luer].

Plantae parvae caespitosae. Pedunculus teres uniflorus. Ovarium cristatum. Bractae florales non inflatae. Sepala in cupulam vel tubum ad basim inflatum cum columnae pede elongato connata.

This is a small, neotropical genus of nine species distinguished by a caespitose habit; single flowers with carinate-crested ovaries without inflated floral bracts; sepals connate into a tube or cup with an inflated base created with a long, curved column-foot; and a lip, divided by marginal folds into a hypochile and an epichile. DNA analyses (Abele et al., 2005) suggest a close relationship with *Spilotantha* Luer, and even the flower of *Buccella dynastes* (Luer) Luer is superficially similar to that of *Spilotantha pachyura* (Rchb.f.) Luer, but the single flowers with a long, curved column-foot distinguish *Buccella*.

Buccella bucculenta (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia bucculenta* Luer & Hirtz, Lindleyana 10: 115, 1995.

Buccella dynastes (Luer) Luer, comb. nov.
Bas.: *Masdevallia dynastes* Luer, Phytologia 42: 459, 1979.

Buccella lamia (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia lamia* Luer & Hirtz, Lindleyana 3: 40, 1988.

Buccella molossoides (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia molossoides* Kraenzl., Repert. Spec. Nov. Regni Veg. 17: 416, 1921.

Buccella molossus (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia molossus* Rchb.f., Linnaea 41: 10, 1877.

Buccella nidifica (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia nidifica* Rchb.f., Otia Bot. Hamburgensia 1: 18, 1878.

Buccella ophioglossa (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia ophioglossa* Rchb.f., Otia Bot. Hamburgensia 1: 17, 1878.

Buccella strigosa (Königer) Luer, comb. nov.
Bas.: *Masdevallia strigosa* Königer, Die Orchidee 41: 142, 1990.

Buccella ventricosa (Schltr.) Luer, comb. nov.
Bas.: *Masdevallia ventricosa* Schltr., Repert. Spec. Nov. Regni Veg. 14: 120, 1915.

BYRSELLA

Byrsella Luer, gen. nov.

Type: *Masdevallia coriacea* Lindl., Ann. Mag. Nat. Hist. 15: 257, 1845 [=*Byrsella coccinea* (Lindl.) Luer].

Ety.: From the Greek *byrsa*, meaning "leather," referring to the leaves.

Syn.: *Masdevallia* sect. *Coriaceae* Rchb.f., Gard. Chron. n.s., 1: 240, 1874, *pro parte*

Syn.: *Masdevallia* sect. *Leontoglossae* Rchb.f., Otia Bot. Hamburgensia 1: 15, 1878.

Type: *Masdevallia leontoglossa* Rchb.f., Bonplandia 3: 69, 1855.

Plantae floresque coriaceae. Pedunculus teres crassus uniflorus. Sepala carnosa plerumque verrucosa. Petalorum calli non protuberantes. Labellum ligulatum integrum plerumque verrucosum.

This is a large Andean taxon of 42 species distinguished by coarse, caepitose plants with thickly coriaceous leaves borne by shorter, stout ramicauls, and a single-flowered, terete peduncle. The sepals are usually thickly fleshy, variously connate into a cup or tube, and often verrucose within. The ovary is smooth. The petals are cartilaginous without a prominent, descending process, but the labellar margin is often obtusely angled. The lip is thick, more or less oblong, entire and undivided by lateral folds. The obtuse apex is verrucose (with rare exceptions), the base more or less cordate with the basal lobes often concave.

Byrsella angulata (Rchb. f.) Luer, comb. nov.
Bas.: *Masdevallia angulata* Rchb. f., Otia Bot. Hamburgensia 1: 15, 1878.

Byrsella anomala (Luer & Sijm) Luer, comb. nov.
Bas.: *Masdevallia anomala* Luer & Sijm, Monogr. Syst. Bot. Missouri Bot. Gard. 91: 227a, 2002.

Byrsella atahualpa (Luer) Luer, comb. nov.
Bas.: *Masdevallia atahualpa* Luer, Selbyana 7: 102, 1982.

Byrsella belua (Königer & D'Alessandro) Luer, comb. nov.
Bas.: *Masdevallia belua* Königer & D'Alessandro, Die Orchidee 44: 142, 1993.

Byrsella bonplandii (Rchb. f.) Luer, comb. nov.
Bas.: *Masdevallia bonplandii* Rchb. f., Bonplandia 3: 69, 1855.
Byrsella bourdetteana (Luer) Luer, comb. nov.
Bas.: *Masdevallia bourdetteana* Luer, Lindleyana 9: 103, 1994.
Byrsella cacodes (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia cacodes* Luer & R.Escobar, Selbyana 7: 70, 1982.
Byrsella caesia (Roezl) Luer, comb. nov.
Bas.: *Masdevallia caesia* Roezl, L'Orchidophile 1: 599, 1881.
Byrsella campyloglossa (Rchb. f.) Luer, comb. nov.
Bas.: *Masdevallia campyloglossa* Rchb. f., Gard. Chron. n.s., 10: 588, 1878.
Byrsella civilis (Rchb.f. & Warsz.) Luer, comb. nov.
Bas.: *Masdevallia civilis* Rchb.f. & Warsz., Bonplandia 2: 115, 1854.
Byrsella colossus (Luer) Luer, comb. nov.
Bas.: *Masdevallia colossus* Luer, Phytologia 39: 193, 1978.
Byrsella coriacea (Lindl.) Luer, comb. nov.
Bas.: *Masdevallia coriacea* Lindl., Ann. Mag. Nat. Hist. 15: 257, 1845.
Byrsella elephanticeps (Rchb.f. & Warsz.) Luer, comb. nov.
Bas.: *Masdevallia elephanticeps* Rchb.f. & Warsz., Bonplandia 2: 116, 1854.
Byrsella foetens (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia foetens* Luer & R.Escobar, Orquideología 13: 157, 1979.
Byrsella fractiflexa (Lehm. & Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia fractiflexa* Lehm. & Kraenzl. in Woolward, *The Genus Masdevallia* t. 17, 1896.
Byrsella fragrans (Woolward) Luer, comb. nov.
Bas.: *Masdevallia fragrans* Woolward, *The Genus Masdevallia*, t. 18, 1896.
Byrsella gargantua (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia gargantua* Rchb.f., Gard. Chron. n.s., 6: 516, 1876.
Byrsella hylodes (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia hylodes* Luer & R.Escobar, Orquideología 13: 162, 1979.
Byrsella hystrix (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia hystrix* Luer & Hirtz, Die Orchidee 37: 139, 1986.
Byrsella lappifera (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia lappifera* Luer & Hirtz, Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 87: 319a, 2002.
Byrsella leontoglossa (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia leontoglossa* Rchb.f., Bonplandia 3: 69, 1855.
Byrsella lilianae (Luer) Luer, comb. nov.
Bas.: *Masdevallia lilianae* Luer, Lindleyana 6: 90, 1991.
Byrsella macroglossa (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia macroglossa* Rchb.f., Otia Bot. Hamburgensia 1: 15, 1878.
Byrsella maloi (Luer) Luer, comb. nov.
Bas.: *Masdevallia maloi* Luer, Phytologia 39: 211, 1978.
Byrsella misasii (Braas) Luer, comb. nov.
Bas.: *Masdevallia misasii* Braas, Die Orchidee 33: 148, 1982.
Byrsella mooreana (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia mooreana* Rchb.f., Gard. Chron. n.s., 21: 408, 1884.
Byrsella murex (Luer) Luer, comb. nov.
Bas.: *Masdevallia murex* Luer, Selbyana 7: 112, 1982.
Byrsella oscarii (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia oscarii* Luer & R.Escobar, Orquideología 13: 175, 1979.
Byrsella pachyantha (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia pachyantha* Rchb.f., Gard, Chron. n.s., 21: 174, 1884.
Byrsella pachysepala (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia pachysepala* (Rchb.f.) Luer, Lindleyana 9: 245, 1995.
Byrsella pardina (Rchb. f.) Luer, comb. nov.
Bas.: *Masdevallia pardina* Rchb. f., Otia Bot. Hamburgensia 1: 15, 1878.
Byrsella peristeria (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia peristeria* Rchb.f., Gard. Chron. n.s., 1: 500, 1874.
Byrsella picea (Luer) Luer, comb. nov.
Bas.: *Masdevallia picea* Luer, Phytologia 44: 167, 1979.
Byrsella platyglossa (Rchb. f.) Luer, comb. nov.
Bas.: *Masdevallia platyglossa* Rchb. f., Gard. Chron. n.s., 18: 552, 1882.
Byrsella rigens (Luer) Luer, comb. nov.
Bas.: *Masdevallia rigens* Luer, Selbyana 5: 150, 1979.
Byrsella sanctae-rosae (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia sanctae-rosae* Kraenzl., Bull. Misc. Inform. 102, 1925.
Byrsella semiteres (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia semiteres* Luer & R.Escobar, Selbyana 5: 154, 1979.
Byrsella spilantha (Königer) Luer, comb. nov.
Bas.: *Masdevallia spilantha* Königer, Die Orchidee 36: 84, 1985.
Byrsella sumapazensis (P.Ortiz) Luer, comb. nov.
Bas.: *Masdevallia sumapazensis* P.Ortiz, Orquideología 14: 223, 1981.
Byrsella torta (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia torta* Rchb.f., Gard. Chron. n.s., 19: 110, 1883.
Byrsella velella (Luer) Luer, comb. nov.
Bas.: *Masdevallia velella* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 87: 367a, 2002.
Byrsella velifera (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia velifera* Rchb.f., Gard. Chron. n.s., 2: 98, 1874.

DIODONOPSIS

Diodonopsis Pridgeon & M.W.Chase, Lindleyana 16: 252, 2001.
Type: *Masdevallia pygmaea* Kraenzl., Repert. Spec. Nov. Regni Veg. Beih. 34: 92, 1925 [=*Diodonopsis pygmaea* (Kraenzl.) Pridgeon & M.W.Chase].
Syn.: *Masdevallia* sect. *Pygmaeia* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 15, 1986.
Syn.: *Masdevallia* subgen. *Pygmaeia* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 77: 10, 2000.

This small taxon, presently composed of three species from Central America and the Andes, was recognized at the sectional level (Luer, 1986), and subgeneric level (Luer, 2000), It is characterized by small, caespitose plants with short ramicauls; a slender peduncle; and densely spiculate-papillose ovaries. The flowers of two species are solitary, and the third species is successively flowered. The sepals are caudate and connate into a short tube or cup. The petals are callous along the lower half, and the lip is oblong.

Although only the DNA of *Masdevallia erinacea* Rchb.f. was analysed (Pridgeon & M.W.Chase, 2001), *M. pygmaea* Kraenzl. was designated the type of the genus. When the DNA of *M. pygmaea* is finally sequenced, it may indicate a a change in relationships.

Diodonopsis anachaeta (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 253, 2001.
Bas.: *Masdevallia anachaeta* Rchb.f., Otia Bot. Hamburgensia 1: 17, 1878.
Diodonopsis erinacea (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 253, 2001.
Bas.: *Masdevallia erinacea* Rchb.f., Linnaea 41: 11, 1877.
Diodonopsis pygmaea (Kraenzl.) Pridgeon & M.W.Chase, Lindleyana 16: 253, 2001.
Bas.: *Masdevallia pygmaea* Kraenzl., Repert. Spec. Nov. Regni Veg. Beih. 34: 92, 1925.

FISSIA

Fissia (Luer) Luer, stat. et gen. nov.
Type: *Masdevallia picturata* Rchb.f., Otia Bot. Hamburgensia 1: 16, 1878.
Syn.: *Masdevallia* subgenus *Fissia* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 77: 10, 2000.
Syn.: *Masdevallia* sect. *Fissae* Rchb.f. *pro parte*, Otia Bot. Hamburgensia 1: 16, 1878.

Previously recognized at the subgeneric level, this small genus of three species is characterized by a small, caespitose habit; a single-flowered peduncle; an inflated floral bract enclosing an ovary with markedly undulate lamellae; free sepals; petals callous on the labellar margin, producing a rounded process above the base, and with a sharply tridentate apex; and an oblong lip with marginal folds that divide it into an epichile and a hypochile.

Fissia picturata (Rchb.f.) Luer is widely distributed in numerous variations from Central America and the Andes. In one locality in Colombia, it appears to hybridize with *Spilotantha amanda* (Rchb.f. & Warsz.) Luer to produce *Spilotantha alvaroi* (Luer & R.Escobar) Luer, a presumed hybrid between the two.

Fissia mutica (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia mutica* Luer & R.Escobar, Orquideología 13: 88, 1978.
Fissia picturata (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia picturata* Rchb.f., Otia Bot. Hamburgensia 1: 16, 1878.
Fissia pleurothalloides (Luer) Luer, comb. nov.
Bas.: *Masdevallia pleurothalloides* Luer, Selbyana 3: 218, 1976.

LUZAMA

Luzama Luer, gen. nov.

Type: *Masdevallia amaluzae* Luer & Malo, Phytologia 39: 185, 1978 [=*Luzama amaluzae* (Luer & Malo) Luer].

Ety.: *Luzama* is an anagram of Amaluza.

Syn.: *Masdevallia* sect. *Amaluzae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 18, 1986.
Type: *Masdevallia amaluzae* Luer & Malo, Phytologia 39: 185, 1978.

Syn.: *Masdevallia* sect. *Aphanes* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 18, 1986, *pro parte*, excluding *hoeijeri* and *pterygiophora*.
Type: *Masdevallia aphanes* Königer, Die Orchidee 30: 196, 1979,

Planta parvae. Racemus successiviflorus. Sepala et ovarium plus minusve papilloso-carinata. Calli petalorum non protuberantes.

This Andean genus with more than 30 variable species is most concentrated in southern Ecuador. It is characterized by a small, caespitose habit with short ramicauls, and a slender erect or prone peduncle with a single flower that is followed at intervals by a second or more flowers. The veins of the sepals are often thickened and minutely papillose at the ovary which is often ribbed, carinate, or verrucose-carinate, to nearly smooth. The sepals are connate into a short tube or cup, and with or without tails. The petals are callous along the lower half, and the lip is oblong and entire with various modifications. Although there is no distinctive feature, except for the papillae at the bases of the sepals which are not always present, the species are usually easily recognized by the few characters listed above. Its union with *Masdevallia* section *Aphanes* is suggested by DNA analyses (Abele et al., 2005).

Luzama amaluzae (Luer & Malo) Luer, comb. nov.
Bas.: *Masdevallia amaluzae* Luer & Malo, Phytologia 39: 185, 1978.
Luzama aphanes (Königer) Luer, comb. nov.
Bas.: *Masdevallia aphanes* Königer, Die Orchidee 30: 196, 1979; emend. 36: 87, 1985.
Luzama audax (Königer) Luer, comb. nov.
Bas.: *Masdevallia audax* Königer, Die Orchidee 37: 106, 1986.
Luzama aurorae (Luer & M.W.Chase) Luer, comb. nov.
Bas.: *Masdevallia aurorae* Luer & M.W.Chase, Lindleyana 8: 39, 1993.
Luzama berthae (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia berthae* Luer & Andreetta, Lindleyana 4: 105, 1989.
Luzama carmenensis (Luer & Malo) Luer, comb. nov.
Bas.: *Masdevallia carmenensis* Luer & Malo, Phytologia 39: 191, 1978.
Luzama chaucae (Luer) Luer, comb. nov.
Bas.: *Masdevallia chaucae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 287, 2004.
Luzama chimboënsis (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia chimboënsis* Kraenzl., Bull. Misc. Inform. 106, 1925.
Luzama collantesii (D.E.Benn. & Christenson) Luer, comb. nov.
Bas.: *Masdevallia collantesii* D.E.Benn. & Christenson, Lindleyana 13: 55, 1998.
Luzama expers (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia expers* Luer & Andreetta, Lindleyana 3: 29, 1988.
Luzama gemmula (Luer & V.N.M.Rao) Luer, comb. nov.
Bas.: *Masdevallia gemmula* Luer & V.N.M.Rao, Treasure of Masdevallia 28: ?, 2006.
Luzama henniae (Luer & Dalström) Luer, comb. nov.
Bas.: *Masdevallia henniae* Luer & Dalström, Lindleyana 9: 108, 1994.
Luzama indecora (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia indecora* Luer & R.Escobar, Novon 1: 170, 1991.
Luzama lynniana (Luer) Luer, comb. nov.
Bas.: *Masdevallia lynniana* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 247, 2004.
Luzama manchinazae (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia manchinazae* Luer & Andreetta, Lindleyana 3: 201, 1988.
Luzama mataxa (Königer & H.Mend.) Luer, comb. nov.
Bas.: *Masdevallia mataxa* Königer & H.Mend., Die Orchidee 44: 178, 1993.
Luzama mentosa (Luer) Luer, comb. nov.
Bas.: *Masdevallia mentosa* Luer, Phytologia 39: 212, 1978.
Luzama merinoi (Luer & Portilla) Luer, comb. nov.
Bas.: *Masdevallia merinoi* Luer & Portilla, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 151, 1999.
Luzama paquishae (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia paquishae* Luer & Hirtz, Lindleyana 3: 204, 1988.
Luzama patula (Luer & Malo) Luer, comb. nov.
Bas.: *Masdevallia patula* Luer & Malo, Phytologia 39: 220, 1978.
Luzama plantaginea (Poepp. & Endl.) Luer, comb. nov.
Bas.: *Specklinia plantaginea* Poepp. & Endl., Nov. Gen. Sp. Pl. 1: 51, t. 89A, 1835.
Luzama pyknosepala (Luer & Cloes) Luer, comb. nov.
Bas.: *Masdevallia pyknosepala* Luer & Cloes, Monogr. Syst. Bot. Missouri Bot. Gard. 83: 489, 2004.
Luzama sanchezii (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia sanchezii* Luer & Andreetta, Phytologia 47: 68, 1980.
Luzama scalpellifera (Luer) Luer, comb. nov.
Bas.: *Masdevallia scalpellifera* Luer, Harvard Papers in Botany 2: 60, 1997.
Luzama schizostigma (Luer) Luer, comb. nov.
Bas.: *Masdevallia schizostigma* Luer, Monogr. Syst. Bot. 72: 114, 1998.
Luzama scopaea (Luer & R.Vásquez) Luer, comb. nov.
Bas.: *Masdevallia scopaea* Luer & R.Vásquez, Phytologia 55: 199, 1984.
Luzama setipes (Schltr.) Luer, comb. nov.
Bas.: *Masdevallia setipes* Schltr., Repert. Spec. Nov. Regni Veg. 27: 38, 1929.
Luzama smallmaniana (Luer) Luer, comb. nov.
Bas.: *Masdevallia smallmaniana* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 87: 505b, 2002.
Luzama strattoniana (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia strattoniana* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 87: 505a, 2002.
Luzama trifurcata (Luer) Luer, comb. nov.
Bas.: *Masdevallia trifurcata* Luer, Lindleyana 11: 190, 1996.

MEGEMA

Megema (Luer) Luer, gen. nov.

Type: *Masdevallia cucullata* Lindl., Orch. Lind. 4, 1846 [=*Megema cucullata* (Lindl.) Luer].

Ety.: From the Greek *mega-*, "large," and *heima*, "a garment," referring to the sheaths and bract.

Syn.: *Masdevallia* subgenus *Cucullatia* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 77: 10, 2000.

Syn.: *Masdevallia* sect. *Cucullatae* Rchb.f., Gard. Chron. n.s., 10: 72, 1878.

Herbae grandes. Pedunculus teres uniflorus bractea florali grandissima cucullata. Petala carnosa ad apicem singulares.

This is a small Andean genus of seven species characterized by large, caespitose plants with loose, imbricating sheaths about stout ramicauls that bear thickly coriaceous leaves. A single, large, durable flower is partially engulfed by a large, cucullate floral bract that hides the rugose ovary. The sepals are semiconnate into a rigid cup or tube. The apices of the thick petals are more or less verrucose or twisted. The lip is divided by marginal folds into an epichile and hypochile. One overlooked species, *Megema macrura* (Rchb.f.) Luer, had been hiding in *Masdevallia* section *Coriaceae*.

Megema cerastes (Luer & R.Escobar), comb. nov.
Bas.: *Masdevallia cerastes* Luer & R.Escobar, Orquideología 13: 51, 1978.
Megema corniculata (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia corniculata* Rchb.f., Gard. Chron. n.s., 9: 72, 1878.
Megema cucullata (Lindl.) Luer, comb. nov.
Bas.: *Masdevallia cucullata* Lindl., Orch. Lind. 4, 1846.
Megema delhierroi (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia delhierroi* Luer & Hirtz, Lindleyana 8: 42, 1993.
Megema hercules (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia hercules* Luer & Andreetta, Lindleyana 3: 198, 1988.
Megema macrura (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia macrura* Rchb.f., Gard. Chron. n.s., 1: 240, 1874.
Megema vidua (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia vidua* Luer & Andreetta, Lindleyana: 3: 207, 1988.

PETALODON

Petalodon Luer, gen. nov.

Type: *Masdevallia collina* L.O.Williams, Amer. Orchid. Soc. Bull. 11: 93, 1943.

Ety.: From the Greek *petalodon*, "toothed petal," referring to

Syn.: *Masdevallia* subgen. *Masdevallia* sect. *Dentatae* (Luer) Luer.

Pedunculus teres successiviflorus. Cupula sepalorum ad basim geniculata. Petala ad basim crassissime dentata. Labellum integrum oblongum.

This is a small genus of four species from the Andes and adjacent Panama. It is distinguished by caespitose habit; a congested, successively flowered raceme borne by a terete peduncle; sepals connate into a geniculate, sepaline cup; cartilagenous petals with a basal callus that appears as a pair, or a fused pair of processes; and an entire, oblong, non-verrucose lip.

Petalodon collina (L.O.Williams) Luer, comb. nov.
Bas.: *Masdevallia collina* L.O.Williams, Amer. Orchid Soc. Bull. 11: 95, 1942.
Petalodon dryada (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia dryada* Luer & R.Escobar, Lindleyana 4: 108, 1989.
Petalodon macrogenia (Arango) Luer, comb. nov.
Bas.: *Masdevallia collina* L.O.Williams var. *macrogenia* Arango, Orquideología 11: 13, 1976.
Petalodon zapatae (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia zapatae* Luer & R.Escobar, Novon 1: 175, 1991.

PTEROON

Pteroon Luer, gen. nov.

Type: *Masdevallia hoeijeri* Luer & Hirtz, Lindleyana 1: 184, 1986 [=*Pteroon hoeijeri* (Luer) Luer].

Ety.: From the Greek, *ptero-* and *oön*, "winged egg," referring to the lamellate ovary.

Syn.: *Masdevallia* subsect. *Pterygiophorae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 77: 10, 2000.

Type: *Masdevallia pterygiophora* Luer & R.Escobar, Lindleyana 3: 50, 1988 [=*Pteroon pterygiophora* (Luer & R.Escobar) Luer].

Syn.: *Masdevallia* sect. *Aphanes* Luer, *pro parte*, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 18, 1986.

Plantae parvae. Racemus uniflorus. Ovarium laminatum cristatum. Sepala carnosa. Petala oblonga. Labellum oblongum.

In habit similar to *Luzama* Luer, this genus contains only two small species with fleshy flowers that are distinguished by the plate-like carinae of the ovaries that overlap the bases of the sepals. Previously treated in *Masvevallia* subgenus *Pygmaeia* section *Aphanes* (Luer, 2000a) [=*Luzama*], DNA analysis (Abele et al., 2005) indicates that *Pteroon* Luer should be excluded not only from *Luzama*, but also from *Diodonopsis* Pridgeon & M.W.Chase.

Pteroon is characterized by a small, caespitose habit with short ramicauls, and a slender suberect peduncle with a single flower. The ovary is broadly laminate with the laminae overlapping the bases of the sepals. The sepals are connate into a short tube with thick apices or short terete tails, and with veins thickened and subcarinate. The petals and lip are oblong and obtuse.

Pteroon hoeijeri (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia hoeijeri* Luer & Hirtz, Lindleyana 1: 184, 1986.
Pteroon pterygiophora (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia pterygiophora* Luer & R.Escobar, Lindleyana 3: 50, 1988.

REGALIA

Regalia Luer, gen. nov.

Type: *Masdevallia dura* Luer, Phytologia 39: 197, 1978 [=*Regalia dura* (Luer) Luer].

Ety.: From the Latin *regalis*, "royal," referring to a regal status among the Pleurothallidinae.

Syn.: *Masdevallia* subsection *Durae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 23, 1986.

Type: *Masdevallia dura* Luer, Phytologia 39: 197, 1978 [=*Regalia dura* (Luer) Luer].

Syn.: *Masdevallia* sect. *Durae* (Luer) Luer, *pro parte*, Monogr. Syst. Bot. Missouri Bot. Gard. 77: 10, 2000.

Plantae robustae grandes. Flores carnosi caudati. Petala crassissima truncata. Labellum ad basim bicavernosum.

A small but remarkable Andean genus of ten species [including an exceptional one from Panama, *Regalia utriculata* (Luer) Luer, of smaller size and without tails of the lateral sepals], that is characterized usually by a large habit with stout ramicauls and thickly coriaceous leaves. The peduncle produces in slow succession a raceme of large, rigid, fleshy, long-lasting flowers that are long-caudate. The petals are thickly cartilagenous, paddle-shaped and truncate. The lip is oblong and thick with a pair of concavities at the base. This genus appears to be allied to single-flowered *Byrsella* Luer.

Regalia ayabacana (Luer) Luer, comb. nov.
Bas.: *Masdevallia ayabacana* Luer, Phytologia 39: 189, 1978.
Regalia dura (Luer) Luer, comb. nov.
Bas.: *Masdevallia dura* Luer, Phytologia 39: 197, 1978.
Regalia goliath (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia goliath* Luer & Andreetta, Novon 2: 6, 1992.
Regalia newmaniana (Luer & Teague) Luer, comb. nov.
Bas.: *Masdevallia newmaniana* Luer & Teague, Monogr. Syst. Bot. Missouri Bot. Gard. 72: 111, 1998.
Regalia panguiënsis (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia panguiënsis* Luer & Andreetta, Phytologia 54: 383, 1983.
Regalia princeps (Luer) Luer, comb. nov.
Bas.: *Masdevallia princeps* Luer, Lindleyana 9: 108, 1994.
Regalia regina (Luer) Luer, comb. nov.
Bas.: *Masdevallia regina* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 65: 113, 1998.
Regalia robusta (Luer) Luer, comb. nov.
Bas.: *Masdevallia robusta* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 72: 113, 1998.
Regalia titan (Luer) Luer, comb. nov.
Bas.: *Masdevallia titan* Luer, Harvard Papers in Botany 9: 6, 1996.
Regalia utriculata (Luer) Luer, comb. nov.
Bas.: *Masdevallia utriculata* Luer, Phytologia 44: 169, 1979.

REICHANTHA

Reichantha Luer, gen. nov.

Type: *Masdevallia schroederiana* Sander ex Veitch, Gard. Chron. ser. 3, 8: 51, 1890 [=*Reichantha schroederiana* (Sander ex Veitch) Luer].

Ety.: From an abbreviation of Reichenbach, noted nineteenth century authority on orchids.

Syn.: *Masdevallia* sect. *Reichenbachianae* Woolward, *por parte*, The Genus *Masdevallia*, sect. X, 1896.

Type: *Masdevallia reichenbachiana* Endres ex Rchb.f., Gard. Chron. n.s., 4: 1875 [=*Reichantha reichenbachiana* (Endres ex Rchb.f.) Luer].

Syn.: *Masdevallia* subsect. *Reichenbachianae* (Woolward) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 48, 1986.

Plantae mediocres vel grandes. Pedunculus teres uni- vel pauciflorus. Petala oblonga callo sine processu. Labellum oblongum leviter bicallosum.

This genus of mostly Central American species is distinguished by a caespitose habit; a single flower or a successively flowered raceme, except one with two simultaneous flowers, borne by a terete peduncle; sepals long-tailed; petals callous on the lower half without a protruding process; and an entire, more or less oblong lip with a pair of often indistinct longitudinal calli on or above the middle third.

Reichantha striatella is transferred here from *Masdevallia* sect. *Polyanthae* because its affinity to the other Central American species is greater than its affinity to the Andean species of section *Polyantha*. Two putative hybrids [*Masdevallia enallax* (Königer) and *M. polita* (Luer)] treated in *M.* section *Reichenbachianae* (Luer, 2000b) are excluded.

Reichantha calura (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia calura* Rchb.f., Gard. Chron. n.s., 19: 230, 1883.

Reichantha chasei (Luer) Luer, comb. nov.
Bas.: *Masdevallia chasei* Luer, Phytologia 46: 394, 1980.

Reichantha cupularis (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia cupularis* Rchb.f., Beitr. Orch. Centr. -Amer. 93, 1866.

Reichantha demissa (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia demissa* Rchb.f., Gard. Chron. ser. 3, 2: 9, 1887.

Reichantha eburnea (Luer & Maduro) Luer, comb. nov.
Bas.: *Masdevallia eburnea* Luer & Maduro, Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 91: 409a, 2002.

Reichantha fulvescens (Rolfe) Luer, comb. nov.
Bas.: *Masdevallia fulvescens* Rolfe, Gard. Chron. ser. 3, 8: 325, 1890.

Reichantha gloriae (Luer & Maduro) Luer, comb. nov.
Bas.: *Masdevallia gloriae* Luer & Maduro, Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 91: 413a, 2002.

Reichantha lankesteriana (Luer) Luer, comb. nov.
Bas.: *Masdevallia lankesteriana* Luer, Lindleyana 10: 20, 1995.

Reichantha marginella (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia marginella* Rchb.f., Gard. Chron. n.s., 20: 38, 1883.

Reichantha mejiana (Garay) Luer, comb. nov.
Bas.: *Masdevallia mejiana* Garay, Orquideología 6: 17, 1970.

Reichantha ostaurina (Luer & V.N.M.Rao) Luer, comb. nov.
Bas.: *Masdevallia ostaurina* Luer & V.N.M.Rao, Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 251, 2003.

Reichantha reichenbachiana (Endres ex Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia reichenbachiana* Endres ex Rchb.f., Gard. Chron. n.s., 4: 257, 1875.

Reichantha rolfeana (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia rolfeana* Kraenzl., Gard. Chron. ser. 3, 9: 488, 1891.

Reichantha schroederiana (Sander ex Veitch) Luer, comb. nov.
Bas.: *Masdevallia schroederiana* Sander ex Veitch, Gard. Chron. ser. 3, 8: 51, 1890.

Reichantha striatella (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia striatella* Rchb.f., Gard. Chron. n.s., 26: 103, 24 July 1886.

Reichantha thienii (Dodson) Luer, comb. nov.
Bas.: *Masdevallia thienii* Dodson, Selbyana 2: 54, 1977.

Reichantha tonduzii (Woolward) Luer, comb. nov.
Bas.: *Masdevallia tonduzii* Woolward, Bull. Herb. Boissier ser. 2, 6: 82, 1906.

Reichantha walteri (Luer) Luer, comb. nov.
Bas.: *Masdevallia walteri* Luer, Selbyana 5: 151, 1979.

RODRIGOA

Rodrigoa Braas, Die Orchidee 30: 203, 1979.

Type: *Masdevallia meleagris* Lindl., Ann. Mag. Nat. Hist. ser. 1, 15: 257, 1845.

Ety.; Named in honor of Rodrigo Escobar R. of Medellín, Colombia, foremost authority on the orchids of Colombia.

Syn.: *Masdevallia* subgen. *Meleagris* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 51, 1986.

Type: *Masdevallia meleagris* Lindl., Ann. Mag. Nat. Hist. ser. 1, 15: 257, 1845.

This genus of 12 species of the Andes of Colombia and Ecuador (with one species, *Rodrigoa parvula* (Schltr.) Luer, occurring also in Peru and Bolivia) was recognized by Lothar Braas in 1979. *Rodrigoa* Braas is distinguished from *Masdevallia* Ruiz & Pav. by thinly coriaceous leaves that taper into a more or less conduplicate petiole, within which the slender peduncle ascends to bear a successively few-flowered raceme. The dorsal sepal is free from the laterals that are connate basally and deflexed from a shallow cup. The petals are marginally callus without a descending process, and the lip is variable.

To the genus *Rodrigoa* Braas the following six transfers need to be made from *Masdevallia*. Of the species originally included, *Rodrigoa bilabiata* (Kraenzl.) Braas is a synonym of *Masdevallia platyglossa* Rchb.f., *R. cryptocopis* (Kraenzl.) Braas is a synonym of *Fissia picturata* (Rchb.f.) Luer, and *R. diversifolia* (Schltr.) Braas is a synonym of *R. parvula* (Schltr.) Luer.

Rodrigoa alexandri (Luer) Braas, Die Orchidee 33(4): 147, 1988.
Bas.: *Masdevallia alexandri* Luer, Phytologia 46: 347, 1980.

Rodrigoa anisomorpha (Garay) Luer, comb. nov.
Bas.: *Masdevallia anisomorpha* Garay, Orquideología 5: 79, 1970.

Rodrigoa fasciata (Rchb.f.) Braas, Die Orchidee 30: 218, 1979.
Bas.: *Masdevallia fasciata* Rchb.f., Gard. Chron. 15(1): 202, 1881.

Rodrigoa heteroptera (Rchb.f.) Braas, Die Orchidee 30: 218, 1979.
Bas.: *Masdevallia heteroptera* Rchb.f., Gard. Chron. 3(1): 590, 1875.

Rodrigoa hortensis (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia hortensis* Luer & R.Escobar, Orquideología 16: 154, 1984.

Rodrigoa meleagris (Lindl.) Braas, Die Orchidee 30: 218, 1979.
Bas.: *Masdevallia meleagris* Lindl., Ann. Mag. Nat. Hist. 15: 257, 1845.

Rodrigoa milagroi (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia milagroi* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 91: 1227, 2002.

Rodrigoa pantomima (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia pantomima* Luer & Hirtz, Selbyana 22: 114, 2001.

Rodrigoa parvula (Schltr.) Luer, comb. nov.
Bas.: *Masdevallia parvula* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 8: 49, 1921.

Rodrigoa planadensis (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia planadensis* Luer & R.Escobar, Lindleyana 3: 50, 1988.

Rodrigoa segurae (Luer & R.Escobar) Braas 30: 219, 1979.
Bas.: *Masdevallia segurae* Luer & R.Escobar, Orquideología 13: 100, 1978.

Rodrigoa ximenae (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia ximenae* Luer & Hirtz, Novon 1: 171, 1991.

SPECTACULUM

Spectaculum Luer, gen. nov.

Type: *Masdevallia racemosa* Lindl., Ann. Mag. Nat. Hist. ser. 1, 15: 256, 1845 [*Spectaculum racemosum* (Lindl.) Luer].

Ety.: From the Latin *Spectaculum*, "a spectacular sight," referring to the uniqueness of the genus with one species.

Syn.: *Masdevallia* sect. *Racemosae* Woolward, The Genus *Masdevallia* sect. IX, 1896.

Planta longirepens. Racemus elongatus speciosus. Sepala in tubum connata; synsepalum expansum ecaudatum. Petala labellumque simplicia.

This unispecific genus is unique in the Pleurothallidinae by virtue of the long-repent habit; coriaceous, elliptical leaves; a loose, elongating inflorescence of successive and simultaneous flowers; deeply connate sepals with the lateral sepals connate into a broadly expanded synsepal without tails; elliptical, acute petals; and a simple, oblong lip.

Spectaculum racemosum (Lindl.) Luer, comb. nov.
Bas.: *Masdevallia racemosa* Lindl., Ann. Mag. Nat. Hist. ser. 1, 15: 256, 1845.

SPILOTANTHA

Spilotantha Luer, gen. nov.

Type: *Masdevallia amanda* Rchb.f. & Warsz., Bonplandia 2: 115, 1854 [=*Spilotantha amanda* (Rchb.f. & Warsz.) Luer].

Ety.: From the Greek *spilotos*, "spotted," and *-antha*, "flower."

Syn.: *Masdevallia* subgen. *Amanda* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 16: 10, 1986.
Syn.: *Masdevallia* sect. *Amandae* Rchb.f., Gard. Chron. n.s., 2: 290, 1874.
Syn.: *Masdevallia* sect. *Polystictae* Kraenzl., Repert. Spec. Nov. Regni Veg. Beih. 34: 32, 1925.

Plantae plerumque grandes. Pedunculus teres. Racemus pauci- ad multiflorus. Bracteae florales plus minusve inflatae. Ovarium carinatum. Sepala caudata.

This neotropical genus of at least 36 known, Andean species and one species from Central America, is well-known to botanists and hobbyists. It is characterized by both large and small plants; ramicauls shorter than coriaceous leaves; an erect raceme with carinate or crested ovaries with more or less inflated floral bracts, and borne by a terete peduncle; sepals usually long-caudate and variously connate into a shallow cup or arcuate-cylindrical tube; petals callous on the lower half, and often denticulate along the margins; and the lip more or less divided by marginal folds into a hypochile and a smaller epichile.

Spilotantha abbreviata (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia abbreviata* Rchb.f., Gard. Chron. n.s., 10: 106, 1878.

Spilotantha alvaroi (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia alvaroi* Luer & R.Escobar, Orquideología 13: 47, 1978.

Spilotantha amanda (Rchb.f. & Warsz.) Luer, comb. nov.
Bas.: *Masdevallia amanda* Rchb.f. & Warsz., Bonplandia 2: 115, 1854.

Spilotantha anceps (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia anceps* Luer & Hirtz, Novon 1: 165, 1991.

Spilotantha bulbophyllopsis (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia bulbophyllopsis* Kraenzl., Repert. Spec. Nov. Regni Veg. 17: 412, 1921.

Spilotantha caloptera (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia caloptera* Rchb.f., Gard. Chron. n.s., 1: 338; et 2: 322, 1874.

Spilotantha chaetostoma (Luer) Luer, comb. nov.
Bas.: *Masdevallia chaetostoma* Luer, Phytologia 39: 192, 1978.

Spilotantha corazonica (Schltr.) Luer, comb. nov.
Bas.: *Masdevallia corazonica* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 8: 48, 1921.

Spilotantha dalstroemii (Luer) Luer, comb. nov.
Bas.: *Masdevallia dalstroemii* Luer, Orchideer 5: sub 194, 1984.

Spilotantha delphina (Luer) Luer, comb. nov.
Bas.: *Masdevallia delphina* Luer, Phytologia 39: 194, 1978.

Spilotantha densiflora (Schltr.) Luer, comb. nov.
Bas.: *Masdevallia densiflora* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 77, 1920.

Spilotantha dimorphotricha (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia dimorphotricha* Luer & Hirtz, Lindleyana 10: 117, 1995.

Spilotantha graminea (Luer) Luer, comb. nov.
Bas.: *Masdevallia graminea* Luer, Phytologia 42: 460, 1979.

Spilotantha hydrae (Luer) Luer, comb. nov.
Bas.: *Masdevallia hydrae* Luer, Phytologia 46: 351, 1980.

Spilotantha leathersii (Luer) Luer, comb. nov.
Bas.: *Masdevallia leathersii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 245, 2004.

Spilotantha lehmannii (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia lehmannii* Rchb.f., Gard. Chron. n.s., 8: 38, 1877.

Spilotantha leptoura (Luer) Luer, comb. nov.
Bas.: *Masdevallia leptoura* Luer, Phytologia 54, 381, 1983.

Spilotantha melanopus (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia melanopus* Rchb.f., Gard. Chron. n.s., 1: 388 et 2: 322, 1874.

Spilotantha microsiphon (Luer) Luer, comb. nov.
Bas.: *Masdevallia microsiphon* Luer, Phytologia 39: 213, 1978.

Spilotantha ova-avis (Luer) Luer, comb. nov.
Bas.: *Masdevallia ova-avis* Luer, Phytologia 39: 217, 1978.

Spilotantha pachyura (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia pachyura* Rchb.f., Gard. Chron. n.s., 2: 322, 1874.

Spilotantha polysticta (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia polysticta* Rchb.f., Gard. Chron. n.s., 1: 338, 1874; et 2: 290. 1875.

Spilotantha porphyrea (Luer) Luer, comb. nov.
Bas.: *Masdevallia porphyrea* Luer, Phytologia 47: 65, 1980.

Spilotantha pozoi (Königer) Luer, comb. nov.
Bas.: *Masdevallia pozoi* Königer, Die Orchidee 44: 180, 1993.

Spilotantha pulcherrima (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia pulcherrima* Luer & Andreetta, Phytologia 47: 66, 1980.

Spilotantha rafaeliana (Luer) Luer, comb. nov.
Bas.: *Masdevallia rafaeliana* Luer, Selbyana 5: 149, 1979.

Spilotantha segrex (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia segrex* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 91: 1169, 2002.

Spilotantha sertula (Luer & Andreetta) Luer, comb. nov.
Bas.: *Masdevallia sertula* Luer & Andreetta, Novon 1: 171, 1991.

Spilotantha staaliana (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia staaliana* Luer & Hirtz, Lindleyana 9: 111, 1994.

Spilotantha superbiens (Luer & Hirtz) Luer, comb. nov.
Bas.: *Masdevallia superbiens* Luer & Hirtz, Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 103: 299 (1173a), 2005.

Spilotantha tentaculata (Luer) Luer, comb. nov.
Bas.: *Masdevallia tentaculata* Luer, Selbyana 7: 112, 1982.

Spilotantha tridens (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia tridens* Rchb.f., Otia Bot. Hamburgensia 1: 13, 1879.

Spilotantha vittatula (Luer & R.Escobar) Luer, comb. nov.
Bas.: *Masdevallia vittatula* Luer & R.Escobar, Harvard Pap. Bot. 9: 9, 1996.

Spilotantha xanthodactyla (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia xanthodactyla* Rchb.f., Gard. Chron. n.s., 8: 552, 1877.

Spilotantha zygia (Luer & Malo) Luer, comb. nov.
Bas.: *Masdevallia zygia* Luer & Malo, Selbyana 5: 395, 1981.

STREPTOURA

Streptoura Luer, stat. & gen. nov.

Type: *Masdevallia caudivolvula* Kraenzl., Notizbl. Bot. Gart. Berlin-Dahlem 8: 128, 1922 [=*Streptoura caudivolvula* (Kraenzl.) Luer].

Syn.: *Masdevallia* subgen. *Volvula* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 77: 10, 2000.

This unispecfic genus for a unique Colombian species is distinguished by a thick, rigid sepaline tube with very thick carinae along the veins within, the sepals terminating in thick, twisted, corkscrew-like tails.

A very close relationship with *Megema* Luer is suggested by recent analyses of DNA (Abele et al. 2005). *Streptoura* agrees in some respects (loose cauline sheaths, single flowers, and a divided lip), but the floral bract is not cucullate and covering the ovary, the tips of the petals are tridentate, not verrucose, and the sepaline carinae and twisted tails are like no others.

Streptoura caudivolvula (Kraenzl.) Luer, comb. nov.

Bas.: *Masdevallia caudivolvula* Kraenzl., Notizbl. Bot. Gart. Berlin-Dahlem 8: 128, 1922.

TRIOTOSIPHON

Triotosiphon Schltr. ex Luer, gen. nov.

Type: *Masdevallia bangii* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 10: 41, 1922 [=*Triotosiphon bangii* (Schltr.) Luer].

Syn.: *Triotosiphon* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 10: 42, 1922, *nomen nudum*.

Syn.: *Masdevallia* sect. *Triotosiphon* (Schltr.) Sweet, *nomen illeg.*

Plantae parvae uniflorae. Sepala in tubum supra medium constrictum profunde connata. Labellum bicarinatum.

This small genus of six minute, short-stemmed, single-flowered, caespitose plants are native to the northern coast of South America and the Andes at lower altitudes. The sepals are deeply connate into a tube that is more or less constricted above the middle, the petals are more or less simple, and the lip is bicallous.

Triotosiphon bangii (Schltr.) Luer, comb. nov.
Bas.: *Masdevallia bangii* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 10: 41, 1922.

Triotosiphon gnoma (Sweet) Luer, comb. nov.
Bas.: *Masdevallia gnoma* Sweet, Bot. Mus. Leafl. 26: 41, 1978.

Triotosiphon irapana (Sweet) Luer, comb. nov.
Bas.: *Masdevallia irapana* Sweet, Bot. Mus. Leafl. 26: 42, 1978.

Triotosiphon kyphonantha (Sweet) Luer, comb. nov.
Bas.: *Masdevallia kyphonantha* Sweet, Bot. Mus. Leafl. 26: 44, 1978.

Triotosiphon lansbergii (Rchb.f.) Luer, comb. nov.
Bas.: *Masdevallia lansbergii* Rchb.f., Nederl. Kruidk. Arch. 4: 317, 1859.

Triotosiphon venezuelana (Sweet) Luer, comb. nov.
Bas.: *Masdevallia venezuelana* Sweet, Bot. Mus. Leafl. 26: 47, 1978.

ZAHLERIA

Zahleria Luer, gen. nov.

Type: *Masdevallia zahlbruckneri* Kraenzl., Repert. Spec. Nov. Regni Veg. 17: 413, 1921 [=*Zahlbrunia zahlbruckneri* (Kraenzl.) Luer].

Ety.: From and abbreviation of Zahlbuckner, a contemporary friend of Kränzlin.

Syn.: *Masdevallia* subsect. *Zahlbrucknerae* Luer, *pro parte*, Monogr. Syst. Bot. Missouri Bot. Gard. 77: 10, 2000.

Type: *Masdevallia zahlbruckneri* Kraenzl., Repert. Spec. Nov. Regni Veg. 17: 413, 1921 [=*Zahlneria zahlbruckneri* (Kraenzl.) Luer].

Syn.: *Masdevallia* sect. *Zahlbrucknerae* Luer *pro parte*, Monogr. Syst. Bot. Missouri Bot. Gard. 82: 432, 2000.

Plantae parvae racemosae. Sepala longicaudata in tubum connata. Petala infra callosa cum processo basali.

This is a small genus of three species, previously treated as subsection *Zahlbrucknerae* of *Masdevallia*, is distinguished by a slender, successively flowered peduncle; long-tailed sepals connate into a tube; acute petals with a red, longitudinal callus on the lower half ending in a retrorse process; and an oblong, subacute lip.

Zahleria naranjapatae (Luer) Luer, comb. nov.
Bas.: *Masdevallia naranjapatae* Luer, Selbyana 5: 375, 1978.
Zahleria vieirana (Luer & R.Escobar.) Luer, comb. nov.
Bas.: *Masdevallia vieirana* Luer & R.Escobar, Lindleyana 3: 211, 1988.
Zahleria zahlbruckneri (Kraenzl.) Luer, comb. nov.
Bas.: *Masdevallia zahlbruckneri* Kraenzl., Notizbl. Bot. Gart. Berlin-Dahlem 8: 128, 1922.

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Luer, C.A., 2000a. Icones Pleurothallidinarum XIX. Systematics of *Masdevallia* part one. Monogr. Syst. Bot. Missouri Bot. Gard. 77: 1-264.

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xanthodactyla 15
zygia 15
Streptoura 1, 2, 16
Streptoura caudivolvula 16
Triotosiphon 1, 16
Triotosiphon bangii 16
gnoma 16
irapana 16
kyphonantha 16
lansbergii 16
venezuelana 16
Zahleria 1, 2, 16
Zahleria naranjapatae 16
vieirana 16
zahlbrucknerae 16

SYSTEMATICS OF *SPECKLINIA* LINDL. AND VEGETATIVELY SIMILAR GENERA (ORCHIDACEAE)

ABSTRACT

A dismemberment of the large, polyphyletic genus *Specklinia* Lindl., as previously conceived, is proposed with recognition of ten new genera. Because of vegetative similarity, their identification will require familiarity of the inflorescence and floral parts. All vegetatively similar genera and species, encompassing 23 genera, from north of southern Brazil and adjacent lands, are described and illustrated with black and white drawings, and a master key to all the vegetatively similar species is given.

New genera:

Dondodia Luer
Gerardoa Luer
Incaea Luer
Lomax Luer
Muscarella Luer
Panmorphia Luer
Ronaldella Luer
Sarcinula Luer
Sylphia Luer
Tridelta Luer

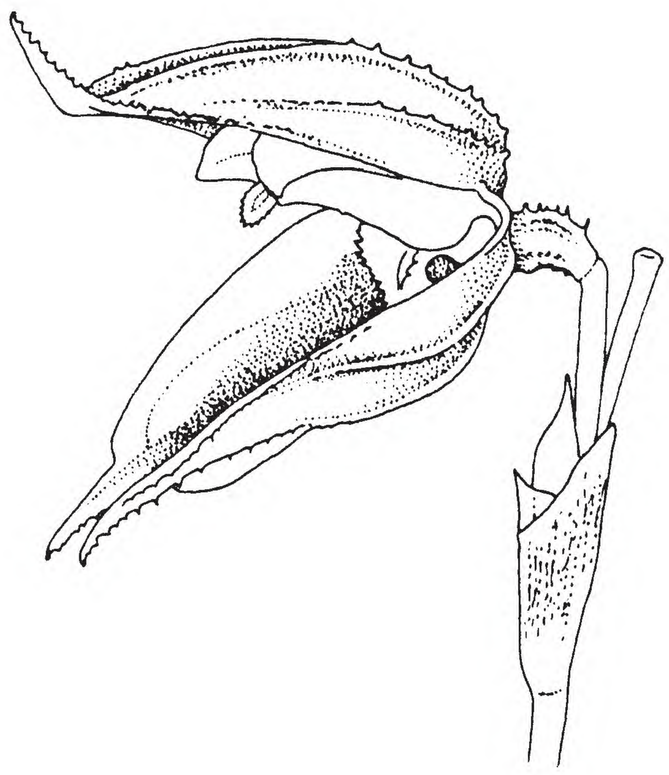
New species:

Muscarella rojohnii Luer
Muscarella werneri Luer
Muscarella xyloura Luer & Hirtz
Specklinia ordinata Luer & Dodson
Specklinia pectinifera Luer & Hirtz

New combinations:

Dondodia erosa (Garay) Luer
Gerardoa montezumae (Luer) Luer
Incaea yupanki (Luer & R.Vásquez) Luer
Lomax punctulata (Rchb.f.) Luer
Muscarella ancora (Luer & R.Vásquez) Luer
Muscarella aristata (Hook.) Luer
Muscarella catoxys (Luer & Hirtz) Luer
Muscarella cestrochila (Garay) Luer
Muscarella claviculata (Luer & Hirtz) Luer
Muscarella clavigera (Luer) Luer
Muscarella coeloglossa (Luer & Hirtz) Luer
Muscarella corynetes (Luer & R.Vásquez) Luer
Muscarella cynocephala (Luer) Luer
Muscarella delicatula (Lindl.) Luer
Muscarella echinodes (Luer & R.Escobar) Luer
Muscarella exesilabia (A.H.Heller & A.D. Hawkes) Luer
Muscarella fimbriata (Ames & C.Schweinf.) Luer
Muscarella fuchsii (Luer) Luer
Muscarella furcatipetala (Luer & Hirtz) Luer
Muscarella gongylodes (Luer) Luer
Muscarella helenae (Fawc. & Rendle) Luer
Muscarella herpestes (Luer) Luer
Muscarella ichthyonekys (Luer) Luer
Muscarella infinita (Luer & Hirtz) Luer
Muscarella intonsa (Luer & R.Escobar) Luer
Muscarella kennedyi (Luer) Luer
Muscarella latilabris (Foldats) Luer
Muscarella lipothrix (Luer) Luer
Muscarella llamachoi (Luer) Luer
Muscarella longilabris (Lindl.) Luer
Muscarella macroblepharis (Rchb.f.) Luer
Muscarella marginata (Rich.) Luer
Muscarella megalops (Luer) Luer
Muscarella oblonga (Luer & Hirtz) Luer
Muscarella perangusta (Luer) Luer
Muscarella quinquiseta (Ames) Luer
Muscarella samacensis (Ames) Luer
Muscarella schudelii (Luer) Luer
Muscarella semperflorens (Lindl.) Luer
Muscarella sibatensis (Lehm. & Kraenzl.) Luer
Muscarella strumosa (Ames) Luer
Muscarella stumpflei (Luer) Luer
Muscarella tamboënsis (Luer & R.Escobar) Luer
Muscarella tempestalis (Luer) Luer
Muscarella trullifera (Luer & Hirtz) Luer
Muscarella tsubotae (Luer & R.Escobar) Luer
Muscarella villosilabia (Luer & Hirtz) Luer
Muscarella xanthella (Luer) Luer
Muscarella zephyrina (Rchb.f.) Luer
Pabstiella parvifolia (Rchb.f.) Luer
Pabstiella tripterantha (Rchb.f.) Luer
Panmorphia abbreviata (Schltr.) Luer
Panmorphia adenochila (Loefgr.) Luer
Panmorphia angulosa (Luer & Hirtz) Luer
Panmorphia barbulata (Lindl.) Luer
Panmorphia brevipes (H.Focke) Luer
Panmorphia burzlaffiana (Luer & Sijm) Luer
Panmorphia casualis (Ames) Luer
Panmorphia caudatipetala (C.Schweinf.) Luer
Panmorphia ciliolata (Schltr.) Luer
Panmorphia clandestina (Lindl.) Luer
Panmorphia comayaguensis (Ames) Luer
Panmorphia corticicola (Schltr. ex Hoehne) Luer
Panmorphia cuspidata (Luer) Luer
Panmorphia dalessandroi (Luer) Luer
Panmorphia duplooyi (Luer & Sayers) Luer
Panmorphia endresii (Luer) Luer
Panmorphia escalarenis (Carnevali & Luer) Luer
Panmorphia fastigiata (Luer & Toscano) Luer
Panmorphia fractiflexa (Ames & C.Scweinf.) Luer
Panmorphia francesiana (Luer) Luer
Panmorphia funerea (Barb.Rodr.) Luer
Panmorphia gehrtii (Hoehne & Schltr.) Luer
Panmorphia githaginea (Pabst & Garay) Luer
Panmorphia grayumii (Luer) Luer
Panmorphia haberi (Luer) Luer
Panmorphia helmutii (Hoehne) Luer
Panmorphia herpethophyton (Schltr.) Luer
Panmorphia holstii (Carnevali & I.Ramírez) Luer
Panmorphia humilis (C.Schweinf.) Luer
Panmorphia imberbis (Luer & Hirtz) Luer
Panmorphia inversa (Luer) Luer
Panmorphia involuta (L.O.Williams) Luer
Panmorphia iota (Luer) Luer
Panmorphia jamaicensis (Rolfe) Luer

Panmorphia kautskyi (Pabst) Luer
Panmorphia kleinii (Pabst) Luer
Panmorphia kuhniae (Luer) Luer
Panmorphia laciniata (Barb.Rodr.) Luer
Panmorphia lasioglossa (Schltr.) Luer
Panmorphia lewisiae (Ames) Luer
Panmorphia lichenophila (C.Porto & Brade) Luer
Panmorphia limbata (Cogn.) Luer
Panmorphia lobiserrata (Barb.Rodr.) Luer
Panmorphia mazei (Cogn.) Luer
Panmorphia megalophora (Luer) Luer
Panmorphia microblephara (Schltr.) Luer
Panmorphia microphyta (Barb.Rodr.) Luer
Panmorphia millipeda (Luer) Luer
Panmorphia minima (C.Schweinf.) Luer
Pammorphia minutalis (Lindl.) Luer
Panmorphia muricaudata (Luer) Luer
Panmorphia nanifolia (Foldats) Luer
Panmorphia oblanceolata (L.O.Williams) Luer
Panmorphia pachyphyta (Luer) Luer
Panmorphia paranaënsis (Schltr.) Luer
Panmorphia paranapiacabensis (Hoehne) Luer
Panmorphia petropolitana (Hoehne) Luer
Panmorphia peroupavae (Hoehne & Brade) Luer
Panmorphia polygonoides (Griseb.) Luer
Panmorphia rabei (Foldats) Luer
Panmorphia recurvipetala (Barb.Rodr.) Luer
Panmorphia reedii (Luer & Toscano) Luer
Panmorphia reptilis (Luer & Dalström) Luer
Panmorphia ricii (Luer & Vásquez) Luer
Panmorphia rubrolimbata (Hoehne) Luer
Panmorphia rudolfii (Pabst) Luer
Panmorphia sanchezii (Luer & Hirtz) Luer
Panmorphia seriata (Lindl.), Luer
Panmorphia sertularioides (Sw.) Luer
Panmorphia steinbuchiae (Carnevali & G.A.Romero) Luer
Panmorphia tigridens (Loefgr.) Luer
Panmorphia vitorinoi (Luer & Toscano) Luer
Panmorphia welteri (Pabst) Luer
Phloeophila oricola (H.Stenzel) Luer
Ronaldella aryter (Luer) Luer
Ronaldella determannii (Luer) Luer
Sarcinula acanthodes (Luer) Luer
Sarcinula acicularis (Ames & C.Schweinf.) Luer
Sarcinula acrisepala (Ames & C.Schweinf.) Luer
Sarcinula alexii (A.H.Heller) Luer
Sarcinula areldii (Luer) Luer
Sarcinula barbae (Schltr.) Luer
Sarcinula brighamella (Luer) Luer
Sarcinula brighamii (S.Watson) Luer
Sarcinula calderae (Luer) Luer
Sarcinula chontalensis (A.H.Heller & A.D.Hawkes) Luer
Sarcinula condylata (Luer) Luer
Sarcinula coronula (Luer) Luer
Sarcinula cycesis (Luer & R.Escobar) Luer
Sarcinula displosa (Luer) Luer
Sarcinula corniculata (Sw.) Luer
Sarcinula exilis (C.Schweinf.) Luer
Sarcinula fulgens (Rchb.f.) Luer
Sarcinula glandulosa (Ames) Luer
Sarcinula guanacastensis (Ames & C.Schweinf.) Luer
Sarcinula leptantha (Schltr.) Luer
Sarcinula psichion (Luer) Luer
Sarcinula purpurella (Luer) Luer
Sarcinula scolopax (Luer & R.Escobar) Luer
Sarcinula simmleriana (Rendle) Luer
Sarcinula striata (H.Focke) Luer
Sylphia cabellensis (Rchb.f.) Luer
Sylphia cactantha (Luer) Luer
Sylphia fuegii (Rchb.f.) Luer
Sylphia turrialbae (Luer) Luer
Tribulago blancoi (Pupulin) Luer
Tridelta aurantiaca (Dod) Luer



SPECKLINIA AND VEGETATIVELY SIMILAR TAXA

Among the more than 3,000 species of pleurothallids, hundreds of small species characterized by ramicauls shorter than the leaves, are a baffling lot from numerous origins, both recent and ancient. Those species with one or more distinctly different, recognizable, floral morphological characters in common are easily separated into respective groups called genera (i.e. *Brachionidium* Lind., *Stelis* Sw., etc.), but all the rest are so similar vegetatively that most fell into the grand category called *Pleurothallis sensu lato*, then, *Specklinia* Lindl.

BINOMIALS ATTRIBUTABLE TO *SPECKLINIA* AND VEGETATIVELY SIMILAR TAXA

(species by alphabet, excluding Brazil)

Panmorphia abbreviata (Schltr.) Luer .....Fig. 100.
Sarcinula acanthodes (Luer) Luer.....Fig. 154.
Sarcinula acicularis (Ames & C.Schweinf.) Luer.....Fig. 155.
Sarcinula acrisepala (Ames & C.Schweinf.) Luer.....Fig. 156.
Sarcinula alexii (A.H.Heller) Luer.....Fig. 157.
Specklinia alta (Luer) Luer .....Fig. 1.
Muscarella ancora (Luer & R.Vásquez) Luer.....Fig. 48.
Panmorphia angulosa (Luer & Hirtz) Luer .....Fig. 101.
Sarcinula areldii (Luer) Luer.....Fig. 158.
Muscarella aristata (Hook.) Luer.....Fig. 49.
Ronaldella aryter (Luer) Luer.....Fig. 152a, 152b.
Tridelta aurantiaca (Dod) Luer.....Fig. 184.
Sarcinula barbae (Schltr.) Luer.....Fig. 159.
Panmorphia barbulata (Lindl.) Luer.....Fig. 102a, 102b.
Tribulago blancoi (Pupulin) Luer .....Fig. 183.
Panmorphia brevipes (H.Focke) Luer .....Fig. 103.
Sarcinula brighamella (Luer) Luer .....Fig. 160.
Sarcinula brighamii (S.Watson) Luer .....Fig. 161.
Panmorphia burzlaffiana (Luer & Sijm) Luer .....Fig. 104.
Sylphia cabellensis (Rchb.f.) Luer.....Fig. 179.
Sylphia cactantha (Luer) Luer.....Fig. 180.
Sarcinula calderae (Luer) Luer .....Fig. 162.
Specklinia calyptrostele (Schltr.) Pridgeon & M.W.Chase.....Fig. 2.
Panmorphia casualis (Ames) Luer.....Fig. 105.
Muscarella catoxys (Luer & Hirtz) Luer .....Fig. 50.
Panmorphia caudatipetala (C.Schweinf.) Luer .....Fig. 106.
Proctoria caymanensis (C.D.Adams) Luer .....Fig. 151.
Muscarella cestrochila (Garay) Luer .....Fig. 51.
Sarcinula chontalensis (A.H.Heller & A.D.Hawkes) Luer.....Fig. 163.
Specklinia ciliifera (Luer) Luer .....Fig. 3.
Panmorphia clandestina (Lindl.) Luer .....Fig. 107.
Muscarella claviculata (Luer & Hirtz) Luer .....Fig. 52.
Muscarella clavigera (Luer) Luer .....Fig. 53.
Muscarella coeloglossa (Luer & Hirtz) Luer.....Fig. 54.
Panmorphia comayaguensis (Ames) Luer .....Fig. 108.
Sarcinula condylata (Luer) Luer .....Fig. 164.
Sarcinula corniculata (Sw.) Luer .....Fig. 165.
Sarcinula coronula (Luer) Luer.....Fig. 166.
Muscarella corynetes (Luer & R.Vásquez) Luer .....Fig. 55.
Specklinia costaricensis (Rolfe) Pridgeon & M.W.Chase .....Fig. 4.
Specklinia curtisii (Dod) Pridgeon & M.W.Chase.....Fig. 5.
Panmorphia cuspidata (Luer) Luer .....Fig. 109.
Sarcinula cycesis (Luer & R.Escobar) Luer .....Fig. 167.
Muscarella cynocephala (Luer) Luer.....Fig. 56.

Panmorphia dalessandroi (Luer) Luer .....Fig. 110.
Muscarella delicatula (Lindl.) Luer .....Fig. 57.
Ronaldella determannii (Luer) Luer.....Fig. 153.
Specklinia digitalis (Luer) Pridgeon & M.W.Chase.....Fig. 6.
Sarcinula displosa (Luer) Luer.....Fig. 168.
Specklinia dodii (Garay) Luer .....Fig. 7.
Areldia dressleri (Luer) Luer.....Icones III, Plate. 16.
Panmorphia duplooyi (Luer & Sayers) Luer .....Fig. 111.
Muscarella echinodes (Luer & R.Escobar) Luer.....Fig. 58.
Atopoglossum ekmanii (Schltr.) Luer .....Fig. 40.
Panmorphia endresii (Luer) Luer .....Fig. 112.
Dondodia erosa (Garay) Luer .....Fig. 42.
Panmorphia escalarenis (Carnevali & Luer) Luer.....Fig. 113.
Atopoglossum excentricum (Luer) Luer.....Fig. 41.
Muscarella exesilabia (A.H.Heller & A.D.Hawkes) Luer.....Fig. 59.
Sarcinula exilis (C.Schweinf.) Luer.....Fig. 169.
Specklinia feuilletii (Luer) Luer .....Fig. 8.
Muscarella fimbriata (Ames & C.Schweinf.) Luer .....Fig. 60.
Specklinia flosculifera (Luer) Luer .....Fig. 9.
Specklinia formondii (Dod) Pridgeon & M.W.Chase.....Fig. 10.
Panmorphia fractiflexa (Ames & C.Schweinf.) Luer.....Fig. 114.
Panmorphia francesiana (Luer) Luer .....Fig. 115.
Muscarella fuchsii (Luer) Luer.....Fig. 61.
Sylphia fuegii (Rchb.f.) Solano & Soto Arenas.....Fig. 181a, 181b.
Sarcinula fulgens (Rchb.f.) Luer .....Fig. 170.
Panmorphia funerea (Barb.Rodr.) Luer.....Fig. 116a, 116b.
Muscarella furcatipetala (Luer & Hirtz) Luer.....Fig. 62.
Sarcinula glandulosa (Ames) Luer .....Fig. 171.
Muscarella gongylodes (Luer) Luer .....Fig. 63.
Specklinia gracillima (Lindl.) Pridgeon & M.W.Chase.....Fig. 11.
Panmorphia grayumii (Luer) Luer .....Fig. 117.
Specklinia grisebachiana (Cogn.) Luer.....Fig. 12a, 12b.
Specklinia grobyi (Bateman ex Lindl.) F.Barros.....Fig. 13.
Sarcinula guanacastensis (Ames & C.Schweinf.) Luer.....Fig. 172.
Panmorphia haberi (Luer) Luer.....Fig. 118.
Muscarella helenae (Fawc. & Rendle) Luer.....Fig. 64.
Muscarella herpestes (Luer) Luer .....Fig. 65.
Panmorphia herpethophyton (Schltr.) Luer .....Fig. 119.
Panmorphia holstii (Carnevali & I.Ramírez) Luer.....Fig. 120.
Panmorphia humilis (C.Schweinf.) Luer.....Fig. 121.
Muscarella ichthyonekys (Luer) Luer.....Fig. 66.
Panmorphia imberbis (Luer & Hirtz) Luer.....Fig. 122a, 122b.
Muscarella infinita (Luer & Hirtz) Luer .....Fig. 67.
Muscarella intonsa (Luer & R.Escobar) Luer.....Fig. 68.
Panmorphia inversa (Luer) Luer .....Fig. 123.
Panmorphia involuta (L.O.Williams) Luer .....Fig. 124.
Panmorphia iota (Luer) Luer .....Fig. 125.
Panmorphia jamaicensis (Rolfe) Luer.....Fig. 126.
Specklinia jesupii (Luer) Luer .....Fig. 14.
Chamelophyton kegelii (Rchb.f.) Garay.....Icones I, Plate 5.
Muscarella kennedyi (Luer) Luer .....Fig. 69.
Madisonia kerrii (Braga) Luer .....Fig. 46.
Panmorphia kuhniae (Luer) Luer .....Fig. 127.
Specklinia lanceola (Sw.) Lindl. .....Fig. 15a, fig. 15b.
Panmorphia lasioglossa (Schltr.) Luer.....Fig. 128.
Muscarella latilabris (Foldats) Luer .....Fig. 70.

Sarcinula leptantha (Schltr.) Luer .....Fig. 173.
Panmorphia lewisiae (Ames) Luer.....Fig. 129.
Specklinia lichenicola (Griseb.) Pridgeon & M.W.Chase.....Fig. 16.
Muscarella lipothrix (Luer) Luer .....Fig. 71.
Muscarella llamachoi (Luer) Luer .....Fig. 72.
Muscarella longilabris (Lindl.) Luer.....Fig. 73.
Masdevalliantha longiserpens (C.Schweinf.) Szlach. & Marg.....Fig. 47.
Specklinia luis-diegoi (Luer) Luer.....Fig. 17.
Muscarella macroblepharis (Rchb.f.) Luer.....Fig. 74.
Xenosia macrorhiza (Lindl.) Luer.....Fig. 185.
Muscarella marginata (Rich.) Luer .....Fig. 75.
Masdevalliantha masdevalliopsis (Luer) Szlach. & Marg. .....Icones III, Plate 20.
Panmorphia mazei (Cogn.) Luer.....Fig. 130.
Panmorphia megalophora (Luer) Luer .....Fig. 131.
Muscarella megalops (Luer) Luer .....Fig. 76.
Specklinia microphylla (A.Rich. & Galeotti) Pridgeon & M.W.Chase.....Fig. 18.
Panmorphia millipeda (Luer) Luer.....Fig. 132.
Panmorphia minima (C.Schweinf.) Luer .....Fig. 133.
Specklinia minuta (Ames & C.Schweinf.) Luer .....Fig. 19.
Panmorphia minutalis (Lindl.) Luer.....Fig. 134.
Specklinia mitchellii (Dod) Luer .....Fig. 20.
Gerardoa montezumae (Luer) Luer.....Fig. 44.
Specklinia morganii (Luer) Luer.....Fig. 21.
Specklinia mornicola (Mansf.) Luer .....Fig. 22.
Specklinia mucronata (Rchb.f.) Luer .....Fig. 23.
Panmorphia muricaudata (Luer) Luer.....Fig. 135a, 135b.
Panmorphia nanifolia (Foldats) Luer .....Fig. 136.
Specklinia napintzae (Luer & Hirtz) Luer .....Fig. 24.
Phloeophila nummularia (Rchb.f.) Garay.....Fig. 147a, 147b, 148c.
Panmorphia oblanceolata (L.O.Williams) Luer.....Fig. 137.
Specklinia obliquipetala (Ames & C.Schweinf.) Luer.....Fig. 25.
Muscarella oblonga (Luer & Hirtz) Luer .....Fig. 77.
Andreettaea ocella (Luer) Luer.....Icones-III, Plate 11.
Specklinia ordinata Luer & Dodson .....Fig. 26.
Phloeophila oricola (H.Stenzel) Luer.....Fig. 148.
Panmorphia pachyphyta (Luer) Luer.....Fig. 138.
Pabstiella parvifolia (Lindl.) Luer.....Fig. 97.
Specklinia pectinifera Luer & Hirtz.....Fig. 27.
Phloeophila peperomioides (Ames) Luer .....Fig. 149.
Muscarella perangusta (Luer) Luer.....Fig. 78.
Specklinia picta (Lindl.) Pridgeon & M.W.Chase.....Fig. 28.
Specklinia pisinna (Luer) Solano & Soto Arenas.....Fig. 29.
Panmorphia polygonoides (Griseb.) Luer .....Fig. 139.
Specklinia producta (Luer) Pridgeon & M.W.Chase.....Fig. 30.
Sarcinula psichion (Luer) Luer .....Fig. 174.
Lomax punctulata (Rchb.f.) Luer .....Fig. 45.
Sarcinula purpurella (Luer) Luer .....Fig. 175.
Muscarella quinquiseta (Ames) Luer.....Fig. 79.
Panmorphia rabei (Foldats) Luer.....Fig. 140a, 140b.
Specklinia recula (Luer) Luer.....Fig. 31.
Panmorphia reptilis (Luer & Dalström) Luer.....Fig. 141.
Panmorphia ricii (Luer & Vásquez) Luer .....Fig. 142.
Muscarella rojohnii Luer.....Fig. 80.
Rubellia rubella (Luer) Luer.....Icones-III, Plate 37.
Muscarella samacensis (Ames) Luer.....Fig. 81a, 81b.
Panmorphia sanchezii (Luer & Hirtz) Luer .....Fig. 143.

Specklinia schaferi (Ames) Luer.....Fig. 32a, 32b.
Muscarella schudelii (Luer) Luer.....Fig. 82.
Sarcinula scolopax (Luer & R.Escobar) Luer.....Fig. 176.
Specklinia segregatifolia (Ames & C.Schweinf.) Solano & Soto Arenas.....Fig. 33.
Muscarella semperflorens (Lindl.) Luer.....Fig. 83.
Panmorphia seriata (Lindl.) Luer.....Fig. 144.
Panmorphia sertularioides (Sw.) Luer.....Fig. 145.
Muscarella sibatensis (Lehm. & Kraenzl.) Luer.....Fig. 84.
Sarcinula simmleriana (Rendle) Luer.....Fig. 177.
Specklinia simpliciflora (Dod) Luer.....Fig. 34.
Muscarella strumosa (Ames) Luer.....Fig. 85.
Specklinia spiculifera (Lindl.) Pridgeon & M.W.Chase.....Fig. 36a, 36b.
Panmorphia steinbuchiae (Carnevali & G.A.Romero) Luer.....Fig. 146.
Specklinia stillsonii (Dod) Pridgeon & M.W.Chase.....Fig. 36.
Sarcinula striata (H.Focke) Luer.....Fig. 178.
Muscarella stumpflei (Luer) Luer.....Fig. 86a. 86b.
Muscarella tamboënsis (Luer & R.Escobar) Luer.....Fig. 87.
Muscarella tempestalis (Luer) Luer.....Fig. 88.
Tribulago tribuloides (Rchb.f.) Luer.....Icones III, Plate 48.
Specklinia trichyphis (Rchb.f.) Luer.....Fig. 37.
Pabstiella tripterantha (Rchb.f.) Luer.....Icones III, Plate 49. and Fig. 98a, 98b.
Muscarella trullifera (Luer & Hirtz) Luer.....Fig. 89a, 89b.
Muscarella tsubotae (Luer & R.Escobar) Luer.....Fig. 90.
Sylphia turrialbae (Luer) Luer.....Fig. 182.
Phloeophila ursula (Luer) Luer.....Fig. 150.
Lueranthos vestigipetalus (Luer) Szlach. & Marg. .....Icones III, Plate 9.
Muscarella villosilabia (Luer & Hirtz) Luer.....Fig. 91.
Muscarella werneri Luer.....Fig. 92.
Specklinia wrightii (Rchb.f.) Luer.....Fig. 38.
Muscarella xanthella (Luer) Luer.....Fig. 93.
Xenosia xenion (Luer & R.Escobar) Luer.....Icones III, Plate 52.
Muscarella xyloura Luer & Hirtz.....Fig. 94.
Pabstiella yauaperyensis (Barb.Rodr.) F.Barros.....Fig. 99.
Specklinia yucatanensis (Ames & C.Schweinf.) Pridgeon & M.W.Chase.....Fig. 39.
Incaea yupanki (Luer & Vásquez) Luer.....Fig. 43.
Muscarella zephyrina (Rchb.f.) Luer.....Fig. 95a, 95b, 95c.

KEY TO THE SPECIES VEGETATIVELY SIMILAR TO *SPECKLINIA*, excluding species endemic in Brazil.

For identification, the species are separated by the most obvious, physical features into five groups: group **one** is distinctly repent (plants usually repent are sometimes also shortly repent to appear caespitose, depending on local conditions); the very shortly repent to caespitose species are separated into four groups: group **two** with a single flower, or a single flower followed by a second; group **three** with fasciculated pedicels at the summit of the peduncle. The loosely racemose species are divided into the final two groups. Group **four** contains species with entire petals, and group **five**, species with distinctly denticulate or fringed petals. Species with simply ciliated or microscopically serrated petals are in group **four**.

Although many closely related species are brought together, some not closely related but morphologically similar species appear together. Some closely related species are found in different groups, i.e. fringed petals (*Muscarella*) occur in groups **one, two, three** and **five**.

Key to groups **One** *through* **Five**

1 Plant distinctly repent ..... **One**
I' Plant very shortly repent to caespitose.....2

2 Inflorescence 1-flowered, or successively 2-flowered..... **Two**
2' Inflorescence racemose 3

3 Raceme contracted into a fascicle of peduncles at the tip of the peduncle..... **Three**
3' Raceme not contracted into a fascicle 4

4 Petals entire, ciliate, or pubescent ..... **Four**
4' Petals denticulate, fringed, or serrated ..... **Five**

Key to the genera and species
Group ONE: *PLANTS REPENT*

1 Leaves subcircular to broadly elliptical, more or less prostrate.....2
1' Leaves elliptical to linear, more or less erect.....25

2 Leaves verrucose or rugose 3
2' Leaves smooth, or very slightly verrucose 8

3 Sepals glabrous.....4
3' Sepals pubescent 5

4 Leaves minute, 2-4 mm long..... *Areldia dressleri*
4' Leaves larger, 7-12 mm long..... *Chamelophyton kegelii*

5 Peduncle longer than the leaf..... *Phloeophila nummularia*
5' Peduncle shorter than the leaf 6

6 Lip oblong without lateral lobes..... *Phloeophila peperomioides*
6' Lip with obtuse lateral lobes below the middle.....7

7 Sepals densely pubescent..... *Phloeophila ursula*
7' Sepals verrucose, not pubescent..... *Phloeophila oricola*

8 Peduncle longer than the leaf 9
8' Peduncle shorter than the leaf 13

9 Peduncle many times longer than the leaf; lateral sepals forming a deep mentum with the column foot..... *Madisonia kerrii*
9' Not with the above 10

10 Lateral sepals connate to near the apex 11
10' Lateral sepals free from above the base 12

11 Lip without basal lobules; column-foot with pair of rounded calli..... *Specklinia microphylla*
11' Lip with basal lobules; column-foot without pair of calli..... *Panmorphia steinbuchiae*

12 Raceme 2-flowered; lip entire..... *Specklinia calyptrostele*
12' Raceme few-flowered; lip ciliate, bilobulate at the base..... *Panmorphia duplooyi*

13 Lip obcuneate, without lobes.....14
13' Lip not obcuneate.....16

14 Inflorescence pendent.....*Ronaldella aryter*
14' Inflorescence erect.....15

15 Lip with a conical, basal callus.....*Ronaldella determannii*
15' Lip without a basal callus.....*Ronaldella aryter*

16 Lip long-ciliate, without lateral lobes.....17
16' Lip not long-ciliate.....18

17 Petals broad, obtuse; lip with slender cilia.....*Panmorphia comayagensis*
17' Petals narrowly acuminate; lip with thick cilia.....*Panmorphia clandestina*

18 Lip narrowly oblong, with or without indistinct lobes.....19
18' Lip with small but distinct, lateral lobes or angles.....21

19 Lateral sepals connate.....*Panmorphia steinbuchiae*
19' Lateral sepals free.....20

20 Petals elliptical, subacute.....*Panmorphia nanifolia*
20' Petals narrowly triangular, acute.....*Panmorphia holstii*

21 Lip spathulate, broadly rounded above the middle.....*Panmorphia burzlaffiana*
21' Lip oblong-ovate, acute to round at the apex.....22

22 Lip with longitudinal carinae, triangular above the middle, acute.....
.....*Panmorphia reptilis*
22' Lip shallowly sulcate, subacute to round at the apex.....23

23 Floral bracts minutely spiculate; lip minutely pubescent.....*Panmorphia lewisiae*
23' Floral bracts glabrous; lip glabrous.....24

24 Petals narrowly acute; lateral sepals nearly free.....*Panmorphia polygonoides*
24' Petals broadly obtuse; lateral sepal connate to above the middle...*Incaea upanki*

25 Peduncle as long as, or longer than the leaf.....26
25' Peduncle shorter than the leaf, but the raceme often surpasses the leaf.....35

26 Raceme congested with imbricating floral bracts at the apex of the peduncle...27
26' Raceme not congested with imbricating floral bracts.....28

27 Lip 1.5 mm long, oblong with dilated margins.....*Specklinia flosculifera*
27' Lip 4 mm long, broadly elliptical.....*Specklinia luis-diegoi*

28 Raceme congested, the exposed rachis between floral bracts shorter than the floral bracts and pedicels.....*Panmorphia involuta*
28' Raceme lax, the exposed rachis between floral bracts much longer than the pedicels.....29

29 Raceme simultaneously 2-flowered.....*Specklinia calyptrostele*
29' Raceme successively 2- to 4-flowered.....30

30 Rhizome slender, markedly elongate; leaves markedly slender..... ..... *Specklinia spiculifera*
30' Rhizome not markedly elongate.....31

31 Column-foot with a pair of rounded calli.....*Specklinia morganii*
31' Column-foot smooth, without a pair of rounded calli.....32

32 Petals narrowly obovate-spathulate.....*Specklinia calyptrostele*
32' Petals narrowly triangular-ovate 33

33 Lip with low, lateral lobes below the middle.....*Panmorphia sertularioides*
33' Lip entire, without lateral lobes 34

34 Inflorescence shorter than the leaves; lip oblong, acute at the apex..... ..... *Panmorphia minutalis*
34' Inflorescence longer than the leaves; lip rounded at the apex..... ..... *Specklinia yucatanensis*

35 Lip with a central cavity 36
35' Lip without a central cavity.....37

36 Sepals caudate..... *Xenosia xenion*
36' Sepals not caudate..... *Xenosia macrorhiza*

37 Rhizome 1-3 cm long between ramicauls.....38
37' Rhizome less than 1 cm long between ramicauls.....39

38 Raceme eventually surpassing the leaf.....*Specklinia ordinata*
38' Raceme shorter than the leaf.....*Panmorphia lasioglossa*

39 Lip oblong, acute, neither with lobes nor dilated below the middle.....40
39' Lip with lobes or dilated below the middle.....41

40 Lip rigid without incurved sides.....*Panmorphia minutalis*
40' Lip thin with sides clasping the column.....*Lueranthos vestigipetalus*

41 Raceme elongate, eventually surpassing the leaf.....42
41' Raceme much shorter than the leaf 43

42 Rachis markedly flexuous; lip ciliate, round at the apex....*Panmorphia angulosa*
42' Rachis subflexuous; lip glabrous, acute.....*Specklinia napintzae*

43 Lip ciliate, slightly dilated below the middle.....44
43' Lip with a lobe or a small angle below the middle, not ciliate.....45

44 Lip narrowly acute, not serrate.....*Panmorphia herpethophyton*
44' Lip obtuse, serrate, apiculate.....*Panmorphia endresii*

45 Floral bracts glandular.....*Panmorphia pachyphyta*
45 Floral bracts glabrous 46

46 Lip with anterior lobe verrucose.....*Atopoglossum excentricum*
46' Lip with anterior lobe smooth 47

47 Lip acute, about 0.5 cm wide.....*Panmorphia oblanceolata*
47' Lip obtuse, about 1 cm wide.....*Panmorphia iota*

Group TWO: *PEDUNCLE SINGLE-FLOWERED, or sometimes followed by a second flower*

This is an artificial key of unrelated, pleurothallid species that are identified by an inflorescence reduced to a single flower that in some species is followed by a second flower. Some single-flowered species will be found in Group One, the repent species, and not herein.

1 Plant large; leaf 2-3 cm wide, abruptly petiolate.....*Gerardoa montezumae*
1' Plant not large; leaf less than 2 cm wide 2

2 Leaves minutely denticulate (frequently seen in Hispaniola).....3
2' Leaves with margins smooth.....6

3 Dorsal sepal connate half the length to a concave synsepal.....*Tridelta aurantiaca*
3' Dorsal sepal shortly connate at the base.....4

4 Dorsal sepal connate to the synsepal at the tip; lip broadly ovate, verrucose.....
..... *Dondodia erosa*
4' Dorsal sepal free at the apex; lip oblong, ciliate.....5

5 Leaf broadly elliptical, 5-8 mm long; ramicaul 1-2 mm long..*Specklinia stillsonii*
5' Leaf elliptical, 10-20 mm long; ramicaul 3-5 mm long.....*Specklinia dodii*

6 Sepals acuminate into filiform tails; ovary papillose.....*Sylphia turrialbae*
6' Sepals acute to obtuse without tails.....7

7 Peduncle 3-4 cm long; pedicel 0.5-1 cm long.....*Sarcinula corniculata*
7' Peduncle less than 5 mm long 8

8 Leaf linear, to 4 cm long; pedicel 7-14 mm long.....*Sarcinula psichion*
8' Leaf elliptical; pedicel less than 5 mm long.....9

9 Ovary densely papillose.....*Tribulago blancoi*
9' Ovary not densely papillose 10

10 Lip denticulate.....*Specklinia mornicola*
10' Lip smooth 11

11 Petals acute with labellar margin dilated.....*Specklinia obliquipetala*
11' Petals obtuse, obovate 12

12 Lip with the apex thick; column-foot with a pair of prominent, rounded calli.....
..... *Specklinia wrightii*
12' Lip with the apex round, decurved; column-foot with a pair of obscure calli.....
..... *Specklinia lichenicola*

Group THREE: *PLANT CAESPITOSE*

Inflorescence a fascicle of pedicels at the tip of the peduncle

1 Petals denticulate, fringed, or serrated.....2
1' Petals entire, cilliate or pubescent 8

2 Sepals tailless with the dorsal sepal elliptical.....3
2' Sepals narrowly acute or caudate 4

3 Lip thickly verrucose without a callus.....*Muscarella xanthella*
3' Lip thin with a "sun-dial" callus.....*Panmorphia barbulata*

4 Sepals with tails shorter than the blade 5
4' Sepals with tails as long as, or longer than the blade.....6

5 Lip with lobes erect, obtuse.....*Muscarella semperflorens*
5' Lip with lobes low, longitudinal.....*Muscarella fuchsii*

6 Sepals long-caudate, clavate.....*Muscarella clavigera*
6' Sepals not clavate, long-caudate 7

7 Lip long-fringed, with sides not revolute.....*Muscarella marginata*
7' Lip minutely denticulate, with the sides revolute.....*Muscarella strumosa*

8 Habit large; leaf 1.5-3 cm wide 9
8' Habit small; leaf less than 1 cm wide.....10

9 Lip with acute, lateral lobes.....*Sarcinula fulgens*
9' Lip with low, obtuse, marginal angles.....*Sarcinula guanacastensis*

10 Sepals spiculate 11
10' Sepals not spiculate 14

11 Sepals spiculate internally, smooth externally.....*Sarcinila acicularis*
11' Sepals spiculate externally 12

12 Sepals obtuse with thick, apical margins.....*Sarcinula acanthodes*
12' Sepals acute.....13

13 Peduncle spiculate; lip entire.....*Sylphia cactantha*
13' Peduncle smooth; lip denticulate.....*Sarcinula coronula*

14 Petals oblong to elliptic-ovate, or obovate.....15
14' Petals obliquely elliptical, more or less dilated on the lower margin.....24

15 Lip channeled between longitudinal calli 16
15' Lip not longitudinally channeled.....20

16 Lip obovate, shallowly channeled; column with descending, oblong wings, the foot with a pair of round calli.....*Sarcinula cycesis*
16' Lip oblong to ovate, deeply channeled; column-foot without calli.....17

17 Petals minutely ciliate 18
17' Petals glabrous 19

18 Peduncle much longer than the leaf.....*Panmorphia duplooyi*
18' Peduncle shorter to about as long as the leaf.....*Panmorphia barbulata*

19 Petals narrowed above obtuse, marginal angles near the middle.....
..... *Panmorphia haberi*
19' Petals very narrowly linear.....*Specklinia ciliifera*

20 Leaf subcircular; lip not channeled.....*Pabstiella parvifolia*
20' Leaf elliptical 21

22 Lip simple, elliptical; column without large wings.....*Specklinia trichyphis*
22' Lip bicallous.....23

23 Lip with a pair of central calli; column with conspicuous, triangular wings.....
..... *Specklinia recula*
23' Lip channeled; column without conspicuous wings.....24

24 Flower non-resupinate; petals half as long as the sepals.....*Panmorphia inversa*
24' Flower resupinate; petals nearly as long as the sepals.....*Panmorphia imberbis*

25 Peduncle glandular 26
25' Peduncle smooth 27

26 Leaves 2-3 mm wide.....*Sarcinula glandulosa*
26' Leaves 6-9 mm wide.....*Sarcinula chontalensis*

27 Dorsal sepal with the apex held lightly by the tips of the synsepal
..... *Sarcinula alexii*
27' Dorsal sepal free from the synsepal 28

28 Sepals narrowly linear, dorsal sepal 15-20 mm long, 2 mm wide.....
..... *Sarcinula scolopax*
28' Sepals not narrowly linear.....29

29 Dorsal sepal narrowly oblong, obtuse; petals and lip proportionately small.....
..... *Sarcinula calderi*
29' Dorsal sepal oblong-ovate, acute to subacute.....30

30 Sepals more or less fleshy, 12-15 mm long.....31
30' Sepals more or less membranous, 2.5-8 mm long.....32

31 Sepals subacute; lip obovate, widest toward a more or less recurved apex.....
..... *Sarcinula condylata*
31' Sepals acute; lip oblong.....*Sarcinula areldii*

32 Synsepal with the sides revolute above the middle; lip broadly oblong with a basal cavity.....*Sarcinula barbae*
32' Synsepal with the sides not revolute; lip without a basal cavity.....33

33 Lip with verrucose calli, with the marginal angles denticulate, lobe-like.....
..... *Sarcinula acrisepala*
33' Lip with the disc smooth or microscopically verrucose, with the marginal angles low, obtuse.....34

34 Column-foot channeled between a thick pair of calli at the tip.....
..... *Sarcinula brighamii*
34' Column-foot without calli 35

35 Sepals ca. 2.5 mm long; flowers purple.....*Sarcinula purpurella*
35' Sepals more than 5 mm long 36

36 Leaf less than 1.5 cm long; sepals light tan, flecked with red.....
..... *Sarcinula brighamella*
36' Leaf 2-4 cm long; sepals yellow or orange, striped with red or purple.....37

37 Lateral sepals free from near the middle with the sides more or less recurved..... ..... *Sarcinula simmleriana*
37' Lateral sepals connate to near the apex without recurved sides.....39

38 Raceme congested with pedicels fasciculate.....*Sarcinula striata*
38' Raceme congested with some pedicels 1-3 mm distant.....*Sarcinula displosa*

Group FOUR: *PLANT CAESPITOSE*
Inflorescence racemose; petals entire, shortly ciliate, or pubescent

1 Sepals semiconnate; lip thick, verrucose, with rounded, lobe-like margins below the middle..... *Lomax punctulata*
1' Not as above.....2

2 Dorsal sepal with the tip adherent to the synsepal.....*Tribulago tribuloides*
2' Dorsal sepal free from the synsepal 3

3 Lip obcuneate, truncate.....*Pabstiella yauaperyensis*
3' Lip not obcuneate, truncate 4

4 Lateral sepals connate to near the apex 5
4' Lateral sepals free at least above the middle.....25

5 Lip with lateral lobes 22
5' Lip oblong, without lateral lobes 6

6 Lip glabrous.....7
6' Lip ciliate 19

7 Peduncle compressed.....8
7' Peduncle terete 11

8 Sepals membranous to the tips 9
8' Sepals fleshy, thickened at the tips.....10

9 Peduncle about as long as the leaf.....*Specklinia costaricensis*
9' Peduncle much exceeding the leaf.....*Specklinia gracillima*

10 Peduncle about as long as the leaf; raceme congested.....*Specklinia pectinifera*
10' Peduncle much exceeding the leaf; raceme lax.....*Specklinia alta*

11 Raceme elongated.....12
11' Raceme not elongated 13

12 Dorsal sepal with tip clavate; column-foot without calli.....*Specklinia digitalis*
12' Dorsal sepal acuminate; column-foot with a pair of calli.....*Specklinia producta*

13 Peduncle ca. 1 mm long; flowers probably cleistogamous.....*Sarcinula exilis*
13' Peduncle more than 5 mm long; flowers not normally cleistogamous.....14

14 Leaf more than 2.5 cm long.....15
14' Mature leaf less than 2 cm long 16

15 Synsepal obtuse, sepals usually white.....*Specklinia grobyi*
15' Synsepal acute, sepals usually striped with red or purple.....*Specklinia picta*

16 Sepals obtuse (like a small grobyi).....*Specklinia pisinna*
16' Sepals acute.....17

17 Lip with a subconical callus near the apex.....*Specklimia formondii*
17' Lip without a callus near the apex.....18

18 Lip bicallous below the middle.....*Specklinia jesupii*
18' Lip bicallous on middle third.....*Specklinia feuilletii*

19 Peduncle shorter than the leaf.....*Specklinia mitchelii*
19' Peduncle longer than the leaf.....20

20 Raceme congested.....*Panmorphia minima*
20' Raceme loosely flowered.....21

21 Raceme flexuous, more than 3-flowered.....*Specklinia grisebachiana*
21' Raceme loosely 2- to 3-flowered.....*Specklinia curtisii*

22 Lip with a black, bulbous apex.....*Panmorphia seriata*
22' Lip not with a black, bulbous apex.....23

23 Leaf 3-6 cm long; raceme loosely 2- to 3-flowered.....*Sarcinula leptantha*
23' Leaf less than 2 cm long; raceme subcongested, more than 3-flowered.....24

24 Lip channeled to the tip between longitudinal calli.....*Panmorphia abbreviata*
24' Lip channeled from below the tip.....*Panmorphia escalarensis*

25 All 3 sepals caudate.....26
25' All 3 sepals not caudate.....27

26 Lip broadly unguiculate below rounded lateral lobes.....*Sylphia feugii*
26' Lip round at the base with round lateral lobes.....*Sylphia cabellensis*

27 Lip oblong without lobes or basal lobules.....28
27' Lip with lobes or basal lobules.....33

28 Ramicaul nearly as long as the leaf.....*Panmorphia ricii*
28' Ramicaul much shorter than the leaf.....29

29 Leaf more than 2.5 cm long; sepals 5-7 mm long.....*Specklinia lanceola*
29' Mature leaf less than 2 cm long; sepals less than 4 mm long.....30

30 Lip with a minutely verrucose callus near the apex.....*Specklinia simpliciflora*
30' Lip with a pair of low, longitudinal calli.....31

31 Lip diffusely cellular-glandular.....*Specklinia minuta*
31' Lip not diffusely cellular-glandular.....32

32 Raceme 3- to 4-flowered; peduncle 6-8 mm long.....*Specklinia schaferi*
32' Raceme 1- to 2-flowered; peduncle 1-2 mm long.....*Specklinia lichenicola*

33 Lip with thin margins below the middle, with basal lobules.....34
33' Lip with marginal lobes.....39

34 Sepals shortly acuminate; lip glabrous.....*Panmorphia francesiana*
34' Sepals not shortly acuminate; lip ciliate.....35

35 Ramicaul nearly as long as leaf 36
35' Ramicaul much shorter than the leaf 38

36 Petals microscopically erose; lip oblong, ciliate.....*Panmorphia brevipes*
36' Petals and lip ciliate 37

37 Sepals more than 6 mm long.....*Panmorphia jamaicensis*
37' Sepals less than 3.5 mm long.....*Panmorpha kuhniae*

38 Raceme much shorter than the leaf.....*Panmorphia grayumii*
38' Raceme slightly longer than the leaf.....*Specklinia minuta*

39 Lip pandurate with long, oblong, lateral lobes.....*Atopoglossum ekmanii*
39' Lip oblong with small lateral lobes 40

40 Lip with rounded lateral lobes above the middle, and with the apex revolute.....
..... *Specklinia segregatifolia*
40' Lip with marginal lobes below the middle 41

41 Lip with large, uncinate, antrorse lobes.....*Specklinia mucronata*
41' Lip with the lobes not uncinate 42

42 Sepals and petals ciliate-pubescent.....43
42' Sepals glabrous.....46

43 Dorsal sepal 5- to 7-veined, 10-12 mm long; lip with lobes slender, erect, 0.7-1 mm long..... *Panmorphia dalessandroi*
43' Dorsal sepal 3- to 5-veined, 4-8 mm long; lip with variable lobes.....44

44 Leaf 6-9 cm long; lip with lobes reduced to low, obtuse angles.....
..... *Panmorphia sanchezii*
44' Leaf 3-6 cm long; lip with lobes distinct.....45

45 Peduncle and floral bracts minutely pubescent; lip truncate...*Panmorphia funerea*
45' Peduncle and floral bracts glabrous: lip not truncate.....47

46 Raceme distantly 2- to 3-flowered, exceeding the leaf.....*Panmorphia humilis*
46' Raceme congested, shorter than the leaf; sepals and ovary thickly carinate.....
..... *Panmorphia megalophora*

Group FIVE: *PLANT CAESPITOSE*
Inflorescence racemose; petals caudate, denticulate, long-ciliate, or fringed

1 Lateral sepals free, at least to the middle; petals with the blade incised.....7
1' Lateral sepals deeply connate; petals with the blade entire.....2

2 Dorsal sepal glabrous, narrowly acute to acuminate.....3
2' Dorsal sepal ciliate or pubescent, acute.....4

3 Lip oblong, ca. 1.25 mm wide.....*Panmorphia cuspidata*
3' Lip narrowly linear, ca. 0.25 mm wide.....*Panmorpha millipeda*

4 Petals with the tail clavellate.....*Panmorphia fractiflexa*
4' Petals with the tail not thickened at the tip.....5

5 Petals with the tail pubescent.....*Panmorphia muricaudata*
5' Petals with the tail glabrous except for a few hairs at the tip.....6

6 Raceme surpassing the leaf; petals with tail slender, glabrous.....
.....*Panmorphia caudatipetala*
6' Raceme usually shorter than the leaf; petals with tail glandular.....
.....*Panmorphia casualis*
7 Raceme creeping, horizintal 8
7' Raceme erect to arching 15

8 Sepals glabrous.....9
8' Sepals ciliate to spiculate 10

9 Lip long-ciliate with slender, antrorse, basal lobes.....*Muscarella herpestes*
9' Lip minutely papillose with erect, rectangular, basal lobes.....
.....*Muscarella ichthyonekys*

10 Sepals long-spiculate or long-ciliate.....11
10' Sepals short-spiculate.....13

11 Peduncle glabrous; petals with slender, forked lobes.....*Muscarella samacensis*
11' Peduncle pubescent 12

12 Petals shortly serrate; lip shortly fimbriate.....*Muscarella fimbriata*
12' Petals long-ciliate; lip entire.....*Muscarella rojohnii*

13 Lip with large, broad lobes below the middle.....*Muscarella echinodes*
13' Lip with low lobes below the middle 14

14 Sepals oblong, subacute.....*Muscarella trullifera*
14' Sepals acute with thick tails.....*Muscarella xyloura*

15 Sepals acute to obtuse, neither narrowly acuminate nor caudate.....16
15' Sepals narrowly acuminate to caudate 22

16 Sepals with the apices contracted into short, thick tails.....*Muscarella kennedyi*
16' Sepals acute to obtuse 17

17 Lip coarsely denticulate, longitudinally furrowed.....*Muscarella llamachoi*
17' Lip neither denticulate nor furrowed as above.....18

18 Lip with a central cavity 19
18' Lip without a central cavity.....20

19 Lip with apical lobe long-ciliate.....*Muscarella exesilabia*
19' Lip with apical lobe glabrous.....*Muscarella coeloglossa*

20 Sepals carinate-spiculate.....*Muscarella trullifera*
20' Sepals glabrous.....21

21 Lip with basal lobes low, broad.....*Muscarella delicatula*
21' Lip with lobes retrorse, obtuse.....*Muscarella longilabris*

22 Sepals, lip and ovary verrucose.....*Muscarella tempestalis*
22' Sepals, lip and ovary not as above.....23

23 Sepals ciliate-spiculate 24
23' Sepals not cellular-spiculate 30

24 Petals forked below the middle.....*Muscarella furcatipetala*

24' Petals fimbriate below the middle 25

25 Lip more than 10 mm long.....*Muscarella megalops*
25' Lip less than 5 mm long 26

26 Lip with sides revolute.....*Muscarella marginata*
26' Lip with sides not revolute 27

27 Lip with erect, ear-like lobes; ovary long-spiculate.....*Muscarella latilabris*
27' Lip not with ear-like lobes; ovary not long-spiculate.....28

28 Lip broadly rounded at apex with antrorse, basal lobes.....*Muscarella werneri*
28' Not as above 29

29 Lip broadly truncate, papillose, long-ciliate.....*Muscarella schudelii*
29' Lip narrowly truncate, not papillose.....*Muscarella cynocephala*

30 Sepals narrowly acute without contracting into a tail.....31
30' Sepals contracted into slender tail 32

31 Petals as large as, and similar to the sepals.....*Muscarella intonsa*
31' Petals smaller than the sepals.....*Muscarella stumpflei*

32 Sepals with tails clavate.....33
32' Sepals not with clavate tails 35

33 Lip contracted into a verrucose, bulbous tip.....*Muscarella corynetes*
33' Lip with the apex broadly rounded 34

34 Lip with small, uncinate, marginal lobes.....*Muscarella cestrochila*
34' Lip with low, rounded, marginal lobes.....*Muscarella claviculata*

35 Lip sharply acute.....*Muscarella catoxys*
35' Lip obtuse to rounded.....36

36 Lip without lateral lobes 37
36' Lip with lateral lobes.....39

37 Lip spiculate-pubescent.....*Muscarella sibatensis*
37' Lip not spiculate-pubescent.....38

38 Lip narrowly oblong, broadly channeled and pubescent within.....
.....*Muscarella tamboënsis*
38' Lip broadly oblong, narrowly channeled, glabrous.....*Muscarella oblonga*

39 Lip with broad, marginal lobes from above the middle.....*Muscarella infinita*
39' Lip with marginal lobes below the middle 40

40 Lip with uncinate, antrorse lobes.....41
40' Lip not with uncinate lobes 42

41 Sepals free, spreading.....*Muscarella ancora*
41' Sepals connate to the tips with the laterals parting to form a dorsal window.....
.....*Andreettaea ocellus*

42 Lip glabrous with low, broad, subquadrate lobes.....*Muscarella lipothrix*
42' Lip ciliate with lobes acute or obtuse.....43

43 Lip densely or long-ciliate above the lobes.....44
43' Lip not long-ciliate above the lobes 45

44 Sepals ca. 10 mm long; lip 3-5 mm long.....*Muscarella macroblepharis*
44' Sepals ca. 5 mm long; lip 1.5 mm long.....*Muscarella villosilabia*

45 Lip broadly rounded and widest above the middle.....*Muscarella cestrochila*
45' Lip not broadly rounded and widest above the middle.....46

46 Lip bulbous with revolute sides above the middle.....47
46' Lip not bulbous with revolute sides above the middle.....50

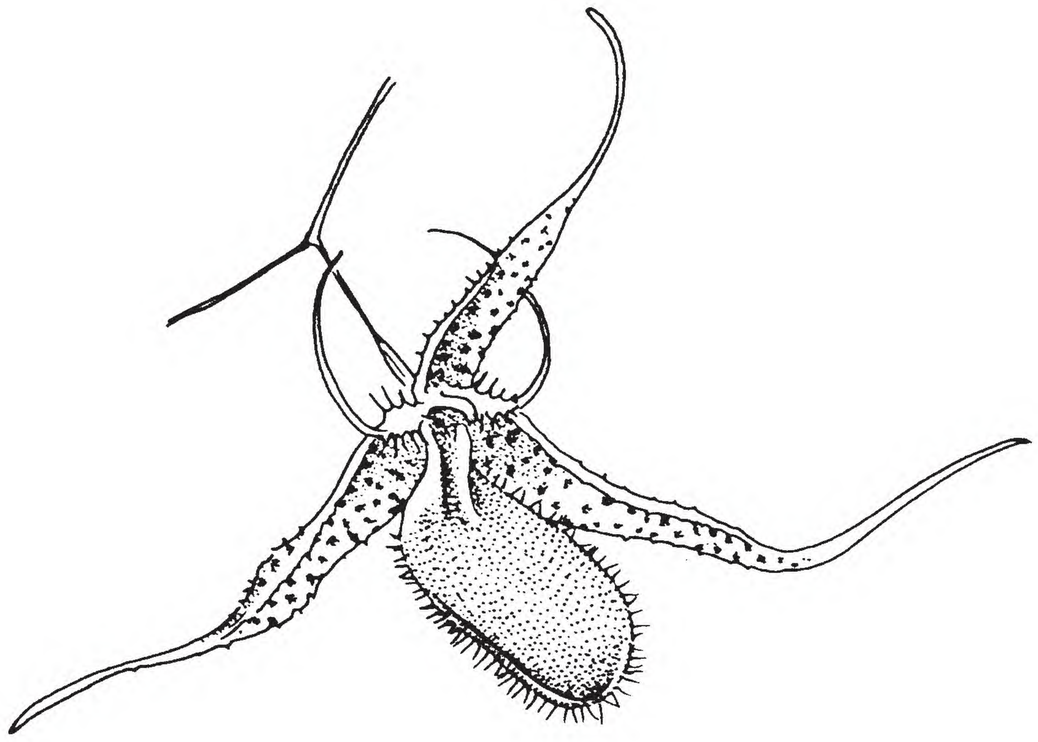
47 Lip verrucose above the middle.....*Muscarella aristata*
47' Lip not verrucose above the middle 48

48 Leaves 2 mm wide.....*Muscarella perangusta*
48' Leaves 6-10 mm wide 49

49 Lip with the tip of the marginal lobe uncinate.....*Muscarella tsubotae*
49' Lip with the tip of the marginal lobe acute.....*Muscarella gongylodes*

50 Sepals 10-12 mm long.....*Muscarella quinquiseta*
50' Sepals 4-8 mm long.....51

51 Lip cellular papillose above the middle.....*Muscarella helenae*
51' Lip smooth above the middle.....*Muscarella zephyrina*



SPECKLINIA

Specklinia Lindl., Gen. Sp. Orchid. Pl. 8, 1830.

Lectotype designated by Garay & Sweet, 1972: 528: *Epidendrum lanceola* Sw. [=*Specklinia lanceola* (Sw.) Lindl.]

Ety.: Named for Rudolph Speckle, early nineteenth century English engraver of illustrations of plants.

Syn.: *Pleurothallis* subgen. *Specklinia* (Lindl.) Garay sect. *Hymenodanthae* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 9, 1882.

Lectotype designated by Luer, 1986: 84: *Pleurothallis grobyi* Bateman ex Lindl. [=*Specklinia grobyi* (Bateman ex Lindl.) F.Barros].

Ety.: From the Greek *hymenodanthos*, "membranous-flowered," referring to the flowers.

Syn.: *Pleurothallis* Sect. *Longicaulae* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 40, 1882.

Type: *Pleurothallis trilineata* Barb.Rodr. [=*Specklinia grobyi* (Bateman ex Lindl.) F.Barros].

Ety.: From the Latin *longicaulis*, "long-stemmed," referring to the long inflorescence.

Syn.: *Pleurothallis* subgen. *Specklinia* (Lindl.) Garay, Orquideología 9: 121, 1974.

Syn.: *Pleurothallis* subsect. *Longicaulae* (Barb.Rodr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 86, 1986.

Plants very small to medium in size, epiphytic, caespitose to long-repent; roots slender. Ramicauls slender, erect or ascending, shorter than the leaf, never proliferating, with 1-3, imbricating, tubular sheaths, about the base. **Leaf** erect to prostrate, coriaceous, narrowly elliptical or narrowly obovate, to broadly elliptical or subcircular, acute to obtuse, narrowed below to a petiolate or subsessile base. **Inflorescence** a few- to many-flowered raceme, erect, shorter or longer than the leaf, produced from below the apex of the ramicaul; peduncles, pedicels and floral bracts glabrous; **sepals** glabrous, acute to obtuse, without a tail, the dorsal sepal free to near the base, the lateral sepals variously connate; **petals** membranous, entire, elliptical-obovate, acute to obtuse, sometimes cellular erose on the apical margin, 1-veined; **lip** entire, oblong, elliptical, sometimes slightly narrowed near or above the middle, rarely with indistinct, lateral lobes, the apex obtuse or rounded, rarely ciliate, the disc featureless to shallowly channeled between low, longitudinal calli, the base more or less truncate, without basal lobules, delicately hinged to the column-foot; **column** semiterete, with the margins usually winged, the apex entire or denticulate, the foot often with a pair of calli, the anther ventral, deciduous, the rostellum and stigma ventral, the pollinia 2, ovoid, free, or more or less lightly adherent to minute viscidia.

Lindley proposed the genus *Specklinia* in 1830 and included five species, but he did not specify a type. The first two species, *S. lanceola* (Sw.) Lindl., *S. sertularioides* (Sw.) Lindl. [=*Panmorphia sertularioides* (Sw.) Luer] had been described in *Epidendrum* L. by Swartz from Jamaican collections he made in the late eighteenth century. The third species, *S. emarginata* Lindl. [=*Sarcinula corniculata* (Sw.) Luer], commonly known as *Pleurothallis corniculata* (Sw.) Lindl., was included with *Epidendrum corniculatum* Sw. in synonymy. The fourth species, *Specklinia floribunda* Lindl. [=*Arthrosia floribunda* (Lindl.) Luer], was Sieber's *206*, *Dendrobium ophioglossoides* Sieber ex Lindl., a later homonym, not Sw. 1799. The fifth species was *Specklinia linearis*, a sterile, unidentifiable collection from either Mexico or Peru by Pavón entered with a question mark, and with *Humboldtia purpurea* [=*Stelis purpurea* (Ruiz & Pav.) Willd.] in synonymy.

In his *Folia Orchidacea* of 1859, Lindley ignored *Specklinia*, and included the species in *Pleurothallis* groups characterized by caespitose, the *Apodae-Caespitosae*, or repent habits, the *Apodae-Prorepentes*.

In 1972, *Specklinia lanceola* (Sw.) Lindl. was designated the lectotype of *Specklinia* by Garay and Sweet. In 1974, Garay proposed *Pleurothallis* subgenus *Specklinia* (Lindl.) Garay, defined primarily by an elongate, winged column, which would include about 800 species, about everything not in *Pleurothallis* R.Br. *sensu stricto*. Most species of the latter are characterized by a short, wingless column with an apical anther. No transfers from *Pleurothallis* to *Specklinia* were made until the mass transfers by Pridgeon and Chase (2001), and Luer (2004), which created

another giant, polyphyletic genus. As recently proposed (Pridgeon & M.W.Chase, 2001), *Specklinia* Lindl. is a huge, polyphyletic accumulation of many taxa. With the aid of hundreds of detailed illustrations, including at least one of every known species of the genus and similar genera, the following genera are proposed for a beginning of a practical solution to the problem. Because dissimilar flowers are found in vegetatively similar groups, and conversely, because similar flowers are found in different vegetative groups, the morphology of the inflorescence provides the best clues to the following generic delimitations.

The five large, major groups with common floral affinities (*Muscarella* Luer, *Pabstiella* Brieger & Senghas, *Panmorphia* Luer, *Sarcinula* Luer, and *Specklinia* Lindl.), albeit with exceptions, are recognized here as genera. After future DNA analyses, none of the five above genera will prove to be monophyletic until the removal of some of the exceptions. Some species that have evolved features foreign to all are treated in small or unispecific genera, but other species still remain as the exceptions.

The lip of a group containing the type of *Specklinia* is more or less oblong, free of calli except for some thickening along longitudinal veins, and without basal lobules; the sepals are tailless; and the petals are simple, entire, and single-veined. Another group, *Sarcinula* (the bundled pedicels, or the brushes), produces an elongated peduncle with imbricating floral bracts and fasciculate pedicels at the summit; tailless sepals; and usually two-veined, entire petals dilated on the lower margin. In another group, *Muscarella* (the flies), the sepals are usually long-tailed, and the petals are denticulate or long-fringed. The fourth group, *Panmorphia* (of many forms), contains vegetatively variable species with tailless sepals; mostly entire, single-veined petals; and a more or less channeled callus on the lip that is bilobulate at the base. The fifth group, *Pabstiella*, contains the large number of various species loosely bound by an unguiculate lip with a pair of submarginal lamellae.

The remainder of the species contains a collection of misfits with interchanged or unusual combinations of morphological features. Five unispecific genera and a small genus (*Sylphia*) Luer of four species with long-tailed sepals and more or less crested ovaries are proposed. Some genes seem to jump from one genus to another, as denticulate leaves that are commonly seen in Hispaniolan species of different genera, as well as in species of other subtribes.

After their removal, *Specklinia* is characterized by a very small to medium-sized habit with more or less petiolate leaves; abbreviated ramicauls; a few- to many-flowered, loose raceme, but congested in a few; glabrous peduncles, floral bracts, pedicels, and ovaries; glabrous sepals without tails; glabrous, entire, single-veined petals, also without tails; an entire, more or less oblong-elliptical lip without basal lobules; and a column-foot often with a central pair of calli.

Some species presently assigned to the newly proposed genera will, no doubt, be reassigned to other, or even new genera, when DNA analyses of all the individual species are completed. A large group of small, vegetatively indistinguishable species with various modifications of the above floral morphology [e.g. *Specklinia mornicola* (Mansf.) Luer] has evolved on the larger islands of the Antilles. Although some suggest various origins, all probably have the same recent ancestry. Hence most, except for the morphologically wildest (*Dondodia* Luer, and *Tridelta* Luer), are retained in old *Specklinia*.

Species north of Brazil attributed to *Specklinia*

Specklinia alta (Luer) Luer .....Fig. 1.
Specklinia calyptrostele (Schltr.) Pridgeon & M.W.Chase.....Fig. 2.
Specklinia ciliifera (Luer) Luer .....Fig. 3.
Specklinia costaricensis (Rolfe) Pridgeon & M.W.Chase.....Fig. 4.
Specklinia curtisii (Dod) Pridgeon & M.W.Chase.....Fig. 5.
Specklinia digitalis (Luer) Pridgeon & M.W.Chase.....Fig. 6.
Specklinia dodii (Garay) Luer .....Fig. 7.
Specklinia feuilletii (Luer) Luer .....Fig. 8.
Specklinia flosculifera (Luer) Luer .....Fig. 9.
Specklinia formondii (Dod) Pridgeon & M.W.Chase.....Fig. 10.
Specklinia gracillima (Lindl.) Pridgeon & M.W.Chase.....Fig. 11.
Specklinia grisebachiana (Cogn.) Luer.....Fig. 12a, 12b.
Specklinia grobyi (Bateman ex Lindl.) F.Barros.....Fig. 13.
Specklinia jesupii (Luer) Luer .....Fig. 14.
Specklinia lanceola (Sw.) Lindl. .....Fig. 15a, 15b.
Specklinia lichenicola (Griseb.) Pridgeon & M.W.Chase.....Fig. 16.
Specklinia luis-diegoi (Luer) Luer .....Fig. 17.
Specklinia microphylla (A.Rich. & Galeotti) Pridgeon & M.W.Chase.....Fig. 18.
Specklinia minuta (Ames & C.Schweinf.) Luer.....Fig. 19.
Specklinia mitchellii (Dod) Luer .....Fig. 20.
Specklinia morganii (Luer) Luer .....Fig. 21.
Specklinia mornicola (Mansf.) Luer.....Fig. 22.
Specklinia mucronata (Rchb.f.) Luer.....Fig. 23.
Specklinia napintzae (Luer & Hirtz) Luer.....Fig. 24.
Specklinia obliquipetala (Ames & C.Schweinf.) Luer.....Fig. 25.
Specklinia ordinata (Luer & Dodson) Luer .....Fig. 26.
Specklinia pectinifera Luer & Hirtz .....Fig. 27.
Specklinia picta (Lindl.) Pridgeon & M.W.Chase.....Fig. 28.
Specklinia pisinna (Luer) Solano & Soto Arenas.....Fig. 29.
Specklinia producta (Luer) Pridgeon & M.W.Chase.....Fig. 30.
Specklinia recula (Luer) Luer .....Fig. 31.
Specklinia schaferi (Ames) Luer .....Fig. 32.
Specklinia segregatifolia (Ames & C.Schweinf.) Solano & Soto Arenas.....Fig. 33.
Specklinia simpliciflora (Dod) Luer.....Fig. 34.
Specklinia spiculifera (Lindl.) Pridgeon & M.W.Chase.....Fig. 35.
Specklinia stillsoni (Dod) Pridgeon & M.W.Chase.....Fig. 36.
Specklinia trichyphis (Rchb.f.) Luer .....Fig. 37.
Specklinia wrightii (Rchb.f.) Luer.....Fig. 38.
Specklinia yucatanensis (Ames & C.Schweinf.) Pridgeon & M.W.Chase.....Fig. 39.

Specklinia alta (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 258, 2004.

Bas.: *Pleurothallis alta* Luer, Lindleyana 11: 143, 1996.

Ety.: From the Latin *altus*, "tall," in reference to the habit.

Plant medium in size, epiphytic, shortly repent; roots slender. Ramicauls slender, erect, 2-2.5 cm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, long-petiolate, 12-14 cm long including the petiole ca. 6 cm long, 1.4-1.7 cm wide, narrowly cuneate into the slender petiole. **Inflorescence** an erect, lax, successively several-flowered raceme up to 27 cm long or longer, including the ancipitous peduncle ca. 17 cm long, from near the base of the ramicaul; floral bracts 2 mm long; pedicels 2 mm long; ovary 1 mm long; **sepals** glabrous, tall-carinate, pale greenish yellow, thickly callous at the apices, the dorsal sepal ovate, acute, 5.5 mm long, 2 mm wide, 3-veined, the lateral sepals connate into an ovate, acute, shortly bifid synsepal, 6 mm long, 3.5 mm wide, 4-veined; **petals** translucent light yellow, obovate, oblique, obtuse, 2.75 mm long, 1 mm wide, the margins of the apex minutely irregular-erose; **lip** yellow-green, elliptic-oblong, 2.5 mm long, 1.5 mm wide, the apex rounded, the margins broadly rounded and slightly elevated below the middle, the disc with 3 parallel, longitudinal calli, the base truncate, with a small, central, marginal cavity, hinged to the column-foot; **column** longitudinally winged, tridentate at the apex, 2 mm long, the foot 1 mm long with a pair of rounded calli, the anther and stigma ventral.

ECUADOR: **Carchi**: epiphytic in wet forest below the paramo toward Maldonado, alt. 2450 m, 26 Feb. 1992, *S. Dalström 1578* (Holotype: MO), C. Luer illustr. 16223.

This species is distinguished by the narrow, long-petiolate leaves borne by much shorter ramicauls from an ascending rhizome. Vegetatively, it is the largest species of the genus. The peduncle is compressed and as long as the leaf with the ramicaul, and the raceme reaches another 10 centimeters higher. The sepals are tall-carinate with sharply acute apices. Immediately behind the apices, the sepals are thickly callous.

Specklinia calyptrostele (Schltr.) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Bas.: *Pleurothallis calyptrostele* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 23, 1923.

Ety.: From the Greek *calyptrostele*, "covered column," referring to the hooded column.

Syn.: *Pleurothallis biflora* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 181, 1923, not *Pleurothallis biflora* H.Focke. 1849.

Ety.: From the Latin *biflorus*, "two-flowered," referring to the two-flowered raceme.

Syn.: *Pleurothallis geminiflora* Ames, Hubbard & C.Schweinf., Bot. Mus. Leafl. 3: 39, 1934, replaced name for *P. biflora* Schltr., 1923.

Ety.: From the Latin *geminiflorus*, "twin-flowered," referring to the two-flowered raceme.

Syn.: *Specklinia geminiflora* (Ames, Hubbard & C.Schweinf.) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant small, epiphytic, repent, the rhizomes 1-3 mm long between ramicauls, forming intertwining masses; roots proportionately thick. Ramicauls suberect, 1-3 mm long, enclosed by a thin, tubular sheath. **Leaf** suberect to prostrate, coriaceous, broadly ovate to subcircular, broadly obtuse to rounded at the apex, 4-6 mm long , 2-4 mm wide, contracted below into a petiole less than 1 mm long. **Inflorescence** an erect, laxly 2-, to 3-flowered raceme, commonly 2-flowered, the flowers ca. 2 mm apart, borne by a slender peduncle 15-20 mm long, from below the abscission layer of the ramicaul; floral bracts 1-1.5 mm long; pedicels 1-1.5 mm long; ovary 0.5 mm long; **sepals** membranous, glabrous, white to pale green, the dorsal sepal ovate, narrowly obtuse, 3-4.5 mm long, 1.3-1.5 mm wide, 3-veined, the lateral sepals free, narrowly oblong-ovate, narrowly obtuse, barely connate basally, 3-4 mm long, 1 mm wide, 2-veined; **petals** translucent, narrowly elliptical-obovate, subacute, narrowed below the middle, 1.25-1.75 mm long, 0.6-0.75 mm wide, without visible midvein; **lip** yellow-green, oblong, entire, rounded at the apex, 1.5-2 mm long, 0.6-0.8 mm wide, the disc shallowly channeled between a pair of slightly thickened veins, the base truncate, hinged to the column-foot; **column** broadly winged in distal two-thirds, bidentate at the apex, 1.5 mm long, the foot 1 mm long, the anther and stigma ventral.

COSTA RICA: **Heredia**: San Jeronimo, alt. 1350 m, May 1920, *C. Wercklé 148* (Holotype destroyed at B; lectotype here designated: AMES 31278, illustr. of type). **Alajuela**: **Alajuela**: San Pedro de San Ramón, alt. 1025 m, Nov. 1921, *A.M. Brenes 176* (holotype destroyed at B, lectotype of *P. biflora*:

AMES; Isolectotypes: CR, NY); Colinas de San Pedro de San Ramón, alt. 1000 m, 14 Nov. 1927, *A.M. Brenes (99)1654* (AMES); La Palma de San Ramón, 1928-29, *A.M. Brenes (22a)1701* (AMES); Los Angeles de San Ramón, 29 Dec, 1931, *A.M. Brenes 14841* (AMES); La Hondura de San Ramón, 6 Dec. 1932, *A.M. Brenes 177* (AMES); Alfaro Ruiz, El Silencia de Zarcero, alt. 1500 m, 19 Nov. 1938, *A. Smith H1381* (AMES); Monteverde Reserve, Río Peñas Blancas, alt. 800 m, 25 Feb. 1987, *W.A. Haber & E. Cruz 6796* (CR, MO); Atlantic slope of Volcán Barba, alt. 660 m, 8 Dec. 1987, *M. Grayum & D. Perry 8491* (CR, MO). **San José**: La Hondura, alt. 1300-1700 m, 16 Mar. 1924, *P.C. Standley & J. Valerio 37613* (AMES).**Cartago**: near Pejivalle, alt. 900 m, 7-8 Feb. 1926, *P.C. Standley & J. Valerio 47012, 47946* (AMES); southeast of Pejibaye along Rio Gato, alt. 700 m, 16 Apr. 1983, *R. Liesner 14268* (MO); Reserva Forestal, southeast of Cariblanco, Río Sarapiquí, alt. 750 m, 1 Nov. 1990, *S. Ingram & K. Ferrell-Ingram 678* (AMES, CR, F, K, MO, SEL); Monteverde Reserve, Eladio's Refugio, alt. 800-900 m, 2 Dec. 1990, *W.A. Haber & C. Ivey 10397* (CR, MO); Reserva Forestal San Ramón Los Angeles, Colonia Palmareña, alt. 800 m, 17 Dec. 1991, *G. Herrera 5004* (CR, MO); without locality, flowered in cultivation at UC, 22 Aug. 1962, *C.H. Lankester s.n.* (K, UC). **Guanacaste**: near Tilarán, Los Ayotes, alt. 600-700 m, 21 Jan. 1926, *P.C. Standley & J. Valerio 45393* (AMES); Parqué Nacional Guanacaste, Estación, Pitilla, alt. 1100 m, 24 Oct. 1990, *C. Chávez 468* (CR, K), C. Luer illustr. 17270; sine loc., ca. 1867, *A. Endres 301, 539* (W); Pacuan-Matina,*A. Endres 539* (W).
PANAMA: **Coclé**: El Valle, alt. 600-1000 m, 8 Dec. 1938, *P.H. Allen 1233* (AMES, MO); El Valle, alt. ca. 1000 m, flowered in cultivation in 1974, *R.L. Dressler 2927* (SEL), C. Luer illustr. 186; Cerro Pilon, El Valle, alt. 3,000 ft., 4 Jan. 1968, *J.A. Duke & B.R. Lallathin 15003* (MO); trail from Cano Blanco del Norte to continental divide above El Cope, alt. 400 m, 5 Feb. 1983, *G. Davidse & C.W. Hamilton 23662* (MO). *Panama*: Cerro Jefe, 17 Aug. 1967, *R.L. Dressler 3021* (MO); Altos de Pacora road, collected 4 Mar. 1976, cultivated 26 Oct. 1976, *C. Luer, J. Luer, R.L. Dressler & P. Taylor 962* (SEL).

This tiny, repent species commonly forms great masses of tiny leaves on moss-covered trunks of large trees in moist forests of Costa Rica and Panama. It was given two names with similar descriptions by Schlechter in 1923, *Pleurothallis calyptrostele* [=*Specklinia calyptrostele*] appearing only pages before in the same publication as *P. biflora* Schltr., a later homonym, which was renamed *P. geminiflora* Ames, Hubbard & C.Schweinf.

Every one to three millimeters, a short ramicaul and leaf rise from the rhizome. The more or less prostrate, overlapping leaves vary from nearly round, about four millimeters long and broad, to elliptical, about six millimeters long and two millimeters wide. The filiform peduncle, about twice as long as the leaf, bears one to three distant, simultaneous or nearly simultaneous flowers (most commonly two). The pale green sepals and petals are membranous and narrowly obtuse; the petals are much smaller and single-veined, if at all; and the lip is simply oblong, and slightly thickened along the pair of veins.

Specklinia ciliifera (Luer), Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Bas.: *Pleurothallis ciliifera* Luer, Lindleyana 14: 111, 1999.
Ety.: From the Latin *ciliifer*, "bearing cilia," referring to the labellum.

Plant very small, epiphytic, caespitose; roots comparatively thick. Ramicauls slender, erect, 2-10 mm long, enclosed by 1-2 loose, tubular sheaths. **Leaves** coriaceous, elliptical, subacute to obtuse, petiolate, 7-22 mm long including the petiole 2-10 mm long, 2.5-4 mm wide, with margins minutely denticulate, cuneate below into the, slender petiole. **Inflorescence** a fascicle of a few successive pedicels borne by an abbreviated peduncle ca. 1 mm long or less, from near the middle of the ramicaul; floral bracts thin, imbricating, 2-2.5 mm long; pedicels 3-5 mm long; ovary 0.75 mm long; **sepals** greenish white, membranous, subcarinate, glabrous, the dorsal sepal narrowly oblong-ovate, acute, concave, 3.5 mm long, 1.3 mm wide, faintly 3-veined, the lateral sepals connate to the apex into an ovate, acute, concave synsepal, 3.6 mm long, 1.5 mm wide, 2-veined, forming a mentum with the column-foot; **petals** membranous, narrowly linear, acute, 1.5 mm long, 0.25 mm wide, 1-veined; **lip** purple, oblong, rounded at the apex, 1.8-2 mm long, 0.4-0.6 mm wide, the disc channeled below the middle between a pair of calli from the base that gradually diverge and disappear above the middle, the margins sparsely long-ciliate below the middle, becoming cellular-glandular above the middle, the base truncate, hinged to the end of the column-foot; **column** broadly winged above the middle, irregularly toothed at the apex, 1.6 m long, the foot 0.8 mm long, with the anther and stigma hooded and ventral.

DOMINICAN REPUBLIC: **Baharona**: in woods, Hoyo de Pelempito, Bahoruco mountains, east of Aceitillar, Pedernales, alt. 700-1000 m, 6 Nov. 1969, *A.H. Liogier 16734* (Holotype: NY). Hoyo de Pelempito, Bahoruco mountains, east of Aceitillar, Pedernales, alt. 700-1000 m, 6 Nov. 1969,*A.H. Liogier 16715* (Paratypes: AMES, NY); near Hoyo de Pelempito, Sierra de Bahoruco, alt. 600 m, 13 Feb. 1969, *A.H. Liogier 13855* (Paratype: NY); Hoyo de Pelempito, Bahoruco mountains, alt. 900 m, 3-8 July 1971, *A.H. Liogier 18125* (Paratype: NY); Isla near Caborojo, alt. 1000 m, collected by Dod 1153, Dec. 1978, flowered in cultivation 4 May 1986 by Dod, *C. Luer 12154* (MO).

This little species is apparently restricted to the mountains of southwestern Dominican Republic where it has been collected several times by Bro. Liogier. It is superficially similar to the Haitian *Specklinia mornicola* (Mansf.) Luer with flowers the same size, and the collections at NY had been identified as such. However, *S. ciliifera* is distinguished by a congested, successively flowered raceme borne by an abbreviated peduncle, instead of a single flower borne by a peduncle thrice longer. The leaves are minutely denticulate, while those of the single-flowered *S. mornicola* are not. The petals are narrowly linear. The lip is oblong and long-ciliate below the middle with the rounded apex cellular-glandular. The lip of *S. mornicola* is similarly oblong, but distinctly denticulate both above and below the middle without long cilia.

Specklinia costaricensis (Rolfe) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Bas.: *Pleurothallis costaricensis* Rolfe, Bull. Misc. Inform. 1917(2): 80, 1917.
Ety.: Named for Costa Rica, country of origin of the collection.

Syn.: *Pleurothallis ehrhartiiflora* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 187, 1923.
Ety.: Named for the superficial resemblance of the flowers to *Ehrhartia*, a genus of the grasses.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-2 cm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 2.5-3.5-6 cm long including an ill-defined petiole ca. 1 cm long, 0.5-1 cm wide, gradually narrowed below into the base. **Inflorescence** an erect, more or less arching, loose, distichous, simultaneously 6- to 12-flowered raceme, up to 14 cm long including the compressed peduncle 3-6 cm long, from near the apex of the ramicaul; floral bracts oblique, acute, 2-3 mm long; pedicels 2 mm long; ovary 1 mm long; **sepals** membranous, subcarinate, glabrous, pale yellow-green, the dorsal sepal ovate, acute, acuminate 4.5-7 mm long, 1.5-2 mm wide, 3-veined, the lateral sepals connate nearly to the apex into an ovate, acute, shortly bifid synsepal, 4.5-7 mm long, 2.5 mm wide, 4-veined; **petals** translucent, obovate, obtuse to rounded at the apex, 1.5-1.75 mm long, 0.75-1 mm wide, 1-veined; **lip** yellow-green to yellow-orange, oblong, rounded at the apex, 2 mm long, 0.75-1 mm wide, the disc shallowly channeled between a longitudinal pair of low calli on the middle third, the base truncate, hinged to the column-foot; **column** broadly winged above the middle, curved-bidentate at the apex, 1.5-1.75 mm long, the foot 1 mm long with a pair of rounded calli near the middle, the anther and stigma ventral.

COSTA RICA: sine loc., flowered in cultivation at Kew Gardens, March 1916, obtained in 1915 from *C.H. Lankester s.n.* (Lectotype here designated: K); same source, flowered in cultivation Nov. 1916, obtained in 1915 from *C.H. Lankester s.n.* (K); received by Kew from Lankester, 1915, flowered in cultivation, 27 Nov. 1922 (AMES). **Alajuela**: San Ramón, road to San Carlos, alt. 4,000 ft., 1867, *A. Endres 43* (W); San Pedro de San Ramón, alt. 950 m, Sept. 1921, *A.M. Brenes 141* (holotype of *P. ehrhartiiflora* destroyed at B, lectotype: CR; isotypes: AMES, NY); San Ramón, between Los Angeles and Río Cataratta, alt. 850-1100 m, 16 June 1983, *K. Barringer 3216* (CR, F); Cordillera de Tilarán, between San Ramón and Bajo Rodriguez, alt. 1100 m, 26 Sept. 1987, *T.B. Croat 68035* (MO). Volcán Arenal, 19 Apr. 1990, *V.A. Funk et al. 10770* (CR, US). **Heredia**: Vara Blanca, alt. 1500-1750 m, July 1937, *A.F. Skutch 3170* (K, MO). **Guanacaste**: slopes of Miravalles above Bijagua, alt. 1500 m, Nov. 1982, *L.D. Gomez et al. 19133* (CR, MO); Abangares, north of Monteverde, Upper San Gerardo Valley, alt. 1500 m, 12 Oct. 1989, *W. Haber & W. Zuchowski 9550* (CR, MO). **Puntarenas**: Monteverde Reserve, near TV towers, alt. 1600 m, 11 Oct. 1985, *E. Bello 3044* (CR, MO). **San José**: Cerro Zurquí, alt. 1800 m, 28 Oct. 1969, *L.D. Gómez 2413* (CR).
PANAMA: **Chiriquí**: vicinity of Fortuna Dam, alt. 1100 m, 8 Feb. 1987, *G. McPherson 10419* (MO). **Veraguas**: near Escuela Agricola Alto de Piedra, 15 Nov. 1974, *S. Mori & J. Kallunki 3160* (MO). **Coclé**: north of El Copé near Rivera saw mill, alt. 700-850 m, 10 Sept. 1977, *J.P. Folsom 5234* (MO); old saw mill above Copé, alt. 900 m, 19 Feb. 1985, *C. & J. Luer, R. & K. Dressler 10635* (MO).
COLOMBIA: **Cauca**: highlands of Popayán, alt. 1500-2000 m, *F.C. Lehmann 7080* (AMES, W); near Popayán, alt. 5,000 ft., 13 May 1878, *F.C. Lehmann s.n.* (AMES). **Valle del Cauca**: Represa Anchicaija, alt. 1000 m, cultivated by Robledos at La Ceja, 19 Mar. 1989, *C. Luer 14274* (MO).

ECUADOR: **Bolívar**: Balzapamba between Babahoya and Guaranda, alt. 730 m, 21 May 1960, *C.H. Dodson 65* (MO, US). **El Oro**: between Piñas and El Placer, alt. 800-1200 m, 6 May 1974, *G. Harling & L. Andersson 14359* (GB). **Pichincha**: west of Santo Domingo, alt. 1000 ft., 4 Nov. 1961, *P. Cazalet & T. Pennington 5290* (AMES, K, US); Centenela, Montañas de Ila, alt. 600 m, 10 July 1979, *B. Løjtnant & U. Molau 15849* (AAU, GB, MO). **Napo**: El Chaco above Santa Rosa, alt. 500 m, *F.C. Lehmann s.n.* (K).

Among 12 specimens made in the greenhouse at Kew over an eight year period from a collection received in 1915 from Lankester, none bears the flowering date, March 1916, published for *Pleurothallis costaricensis* Rolfe [=*Specklinia costaricensis*]. The subsequent specimens, intermingled on four sheets, were made in Nov. 1916, Nov. 1917, Sept. 1918, Oct. 1918, Aug. 1920, Oct. 1922, Nov. 1922, June 1923, Sept. 1923, Oct. 1923, and Dec. 1923. Among them is one undated specimen of a raceme with "Pleurothallis costa-ricensis Rolfe" written in pencil, which I suspect is from the original flowering in March 1916. It is chosen for the lectotype.

In Reichenbach's herbarium there is a drawing of this species cultivated by Veitch, probably in the 1880's, numbered 300, and with "Pleurothallis platycaulis" written in Reichenbach's handwriting. This was never published. Cogniaux described another specimen, probably at RB (ined. in Herb. Hort. Petropol.) as "Pleurothallis platycaulis" that Reichenbach had annotated with that name. This specimen is a synonym of Lindley's Brazilian *P. luteola* Lindl.

Specklinia costaricensis is relatively frequent in Costa Rica and Panama, and in the western Andes of Colombia and Ecuador. It is most easily recognized by the small, caespitose habit and a raceme of simultaneous flowers borne by a compressed peduncle. The flowers are much like those of the *S. grobyi-picta* complex.

Specklinia curtisii (Dod) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.
Bas.: *Pleurothallis curtisii* Dod, Moscosoa 3: 111, 1984.
Ety.: Named in honor of J.T. Curtis who first collected this species.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-6 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, subacute to obtuse, petiolate, 12-20 mm long including a petiole 5-6 mm long, 3.5-4 mm wide, with the margins slightly microscopically erose, the base narrowly cuneate into the petiole. **Inflorescence** an erect, distichous, loose, successively few-flowered raceme, to 35 mm long including the slender peduncle ca 20 mm long, borne from near the apex of the ramicaul; floral bracts oblique, acute, 1 mm long; pedicels 3 mm long; ovary 0.5 mm long; **sepals** yellow, membranous, glabrous, subcarinate, the dorsal sepal ovate, acute, 5 mm long, 2.3 mm wide, 3-veined, the lateral sepals connate into an ovate, obtuse, shortly bifid, shallowly concave lamina, 5 mm long, 2.75 mm wide, 2-veined, forming a small mentum below the column-foot; **petals** membranous, glabrous, elliptical, acute, 2 mm long, 1 mm wide, 1-veined, with the margins minutely erose above the middle; **lip** oblong, rounded at the apex, 2.8 mm long, 1.2 mm wide, the margins erect below the middle and finely ciliate, the disc cellular-glandular, with a pair of low, longitudinal calli, the base subtruncate, hinged to the tip of the column-foot; **column** winged above the middle, semiterete, 1.5 mm long, the anther and stigma ventral, the foot 1 mm long.

HAITI: Massif de la Hotte, Les Cayes, Formond, alt. 950 m, 19 Feb. 1982, *D. Dod 892* (Holotype: JBSD; Isotypes: AMES, MO, NY, US); Formond, May 1982, *D. Dod 12* (SEL), C. Luer illustr. 9150; Riviere Glacé, alt. 800 m, 22 Apr. 1982, flowered in cultivation 7 May 1982, *D. Dod 892* (JBSD); Riviere Glacé, Morne la Hotte, alt. 750 m, 5 Aug. 1945, *L.R. Holdridge 2103* (AMES).
DOMINICAN REPUBLIC: **Santiago-Rodriguez**: Monción, near junction of Río Cenobi and Río Cenobicito, alt. 800 m, 18 June 1929, *E.L. Ekman 12892* (AMES, S); Monción, La Leonor, El Aguacate, Mao River, alt. 500 m, 22 Oct. 1968, *A.H. Liogier 13211* (AMES, NY); La Leonor, El Aguacate, alt. 550 m, 22 Oct. 1968, *A.H. Liogier 13217* (NY, US). **Barahona**: Sierra del Bahoruco, Pedernales, Las Abejas, west of Aceitillar, alt. 1200-1400 m, 24 Feb. 1969, *A.H. Liogier 14160* (AMES, NY); Polo, Loma La Haut. alt. 600-1300 m, 26 Feb-12 Mar. 1922, *W.L. Abbott 1890* (AMES). La Lanza, between Monteada Nueva and Polo, alt. 900-1000 m, 27 Feb. 1969, *A.H. Liogier 14305* (NY).

This little species is endemic on the island of Hispaniola where it is not uncommon. It is characterized by a loose, successively few-flowered raceme that surpasses the small, narrowly elliptical, petiolate leaves. Although smooth to the naked eye, the margins of the leaves are microscopically erose. The lateral sepals are connate nearly to the tips. The petals are microscopically erose above the middle. The lip is oblong with the margins erect below the middle and finely ciliate. The disc is longitudinally bicallous.

Specklinia digitalis (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Bas.: *Pleurothallis digitalis* Luer, Orquídea, Mex., 6: 3, 1976, as *digitale*.

Ety.: From the Latin *digitalis*, "finger-like," referring to the tip of the dorsal sepal.

Plant small, epiphytic, caespitose to very shortly repent; roots slender. Ramicauls slender, erect, 1-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, shiny green above, spotted with purple beneath, broadly elliptical, obtuse, shortly petiolate, 12-15 mm long including the petiole 1 mm long, 5-6 mm wide, the base cuneate into the petiole. **Inflorescence** a lax, distichous, flexible, flexuous, successively several-flowered raceme, up to 15 cm long including the peduncle 3-4 cm long, borne laterally from the ramicaul; floral bracts oblique, 1.5 mm long; pedicels 2-4 mm long; ovary 2.5-3 mm long; **sepals** pale yellow-green, membranous, glabrous, the dorsal sepal elliptical, concave, 5 mm long, 2.25 mm wide, 3-veined, with the subacute apex contracted into a clavate, obtuse tip that is concave from beneath, the lateral sepals connate to near the apex into an elliptical, concave synsepal, 5 mm long, 3 mm wide, 4-veined, with the apex obtuse, minutely bifid; **petals** translucent pale yellow, membranous, obovate, obtuse, 2.25 mm long, 0.9 mm wide, 1-veined; **lip** pale yellow-green, oblong, 2 mm long, 0.8 mm wide, the apex rounded, the disc shallowly concave between a pair of low, longitudinal calli, the base subtruncate, hinged to the column-foot; **column** shallowly winged above the middle, bidentate at the apex, 2 mm long, the anther and stigma ventral, the foot less than 1 mm long.

MEXICO: sine loc., flowered in cultivation by H.P. Jesup in Bristol, CT, 18 Oct. 1975, *C. Luer 047* (Holotype: SEL); same clone, cultivated in Bristol, CT, by H.P. Jesup, 28 May 2000, *C. Luer 19411* (MO).

This species is known only from the original collection in Mexico, and after 25 years, it is still thriving today in the collection of the Jesups in Connecticut. It is characterized by a minute, caespitose plant with thick, dark green, purple-spotted, elliptical leaves. Proportionately, the raceme is exceeding long and distantly flowered, often with two to three of the little, pale yellow-green flowers open simultaneously. The tip of the dorsal sepal is clubbed with a cavity from below, similar to that seen in *Specklinia segregatifolia* (Ames & C.Schweinf.) Solano & Soto Arenas. The synsepal and petals are obtuse, and the lip is oblong with a parallel pair of low, longitudinal calli.

Specklinia dodii (Garay) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Bas.: *Pleurothallis dodii* Garay, J. Arnold Arb. 1: 463, 1969, replaced name for *P. cryptantha* Cogn., 1912.

Ety.: Named in honor of Dr. Donald D. Dod, author of numerous species of Hispaniola.

Syn.: *Pleurothallis cryptantha* Cogn., Symb. Antill. 7: 176, 1912, not *P. cryptantha* (Barb.Rodr.) Cogn., Gen. Sp. Orchid. Nov. 2: 80, 1877.

Ety.: From the Greek *cryptanthos*, "a hidden flower," referring to the tiny flower at the base of a ramicaul.

Plant very small, epiphytic, caespitose; roots comparatively thick. Ramicauls slender, erect, 3-5 mm long, enclosed by 2-3 thin, loose, tubular sheaths. **Leaf** purple, erect, coriaceous, minutely denticulate, petiolate, 10-20 mm long including the petiole 3-8 mm long, the blade elliptical, subacute to obtuse, 5-7 mm wide, the base cuneate into the petiole. **Inflorescence** a single flower, produced successively by

erect peduncles ca. 2 mm long, from near the base of the ramicaul within the basal sheaths; floral bract infundibular, 1.5 mm long; pedicel 2 mm long; ovary 0.5 mm long; **sepals** purple, glabrous but microscopically ciliate, subcarinate, the dorsal sepal ovate, acute, concave, 2.25 mm long, 1 mm wide, 3-veined, the lateral sepals connate into an ovate, concave, subacute, minutely bifid, synsepal, 2.5 mm long, 1.5 mm wide, 2-veined, forming a mentum with the column-foot; **petals** membranous, translucent, glabrous, obovate, microscopically erose toward the acute apex, 1.25 mm long, 0.5 mm wide, 1-veined; **lip** oblong, rounded at the apex, 1.8 mm long, 0.4 mm wide, the disc broadly channeled between thickened, long-ciliate margins, the base truncate, delicately hinged to the tip of the column-foot; **column** broadly winged above the middle, semiterete, denticulate at the apex, 1.5 mm long, the anther and stigma ventral, the foot 0.75 mm long.

DOMINICAN REPUBLIC: **Constanza**: near Constanza, alt. 1200 m, *H. von Türckheim 3280* (Holotype: BR). Sierra del Bahoruco, Pedernales, Las Abejas, west of Aceitillar, alt. 1200-1300 m, collected by D. Dod, cultivated, 8 Feb. 1969, *A.H. Liogier 13655* (AMES, NY, P), C. Luer illustr. 19024; Las Abejas, Cabo Rojo, collected by D. Dod, 30 Apr. 1968, cultivated, Oct. 1968, *A.H. Liogier 13509* (NY); Bahoruco Mts., Hoyo de Pelempito, alt. 900 m, 3-8 July, 1971, *A.H. Liogier 18125* (US).

This rare species was first described in 1912 as *Pleurothallis cryptantha* Cogn. by Cogniaux from a collection by Türckheim, apparently forgetting that he had transferred the epithet in 1877 to *Pleurothallis* R.Br. for a Brazilian species named by Barbosa Rodrigues. Garay proposed a new name in honor of Dod who had rediscovered the species.

Specklinia dodii is a small, caespitose species with purple, petiolate leaves that are minutely denticulate on the margins, a character seen in many Hispaniolan species of orchids, not limited to pleurothallids. The tiny purple flower is borne singly by a short peduncle and pedicel from near the base of the ramicaul. The dorsal sepal and synsepal are microscopically ciliate toward the acute apices; the petals are obovate and minutely erose toward the acuminate apex; and the proportionately large lip is oblong, channeled medially, with thick, long-ciliate margins.

Specklinia feuilletii (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Bas.: *Pleurothallis feuilletii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 237, 2004.

Ety.: Named for Christian Feuillet, at that time with ORSTOM, Cayenne, French Guiana.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 1-2 thin, tubular sheaths. **Leaf** erect, coriaceous, suffused with purple, elliptical-obovate, subacute to obtuse, petiolate, 7-10 mm long including a petiole 1-2 mm long, 3 mm wide, the base cuneate into the petiole. **Inflorescence** a lax, distichous, more or less flexuous, simultaneously few-flowered raceme 2-2.5 cm long, borne by a slender peduncle ca. 1.5 cm long, with a minute bract below the apex of the ramicaul; floral bracts oblique, acute, 1-1.25 mm long; pedicels 2-2.5 mm long; ovary 1.3 mm long; **sepals** pale yellow, membranous, glabrous, carinate, thickened at the tip, slightly acuminate, sharply acute, the dorsal sepal oblong, 4.75 mm long, 2 mm wide, 3-veined, the lateral sepals connate to near the apex into an ovate, shallowly concave synsepal, 4.5 mm long, 2.5 mm wide expanded, 2-veined, forming a shallow mentum below the column-foot; **petals** membranous, glabrous, elliptical, acute, dilated on the lower margin above the middle, 1.2 mm long, 0.6 mm wide, 1-veined; **lip** oblong, rounded at the apex, 2.2 mm long, 1.8 mm wide, shallowly concave centrally between a pair of low, longitudinal calli, the base truncate, hinged to the tip of the column-foot; **column** broadly winged above the middle, 1.75 mm long, bidentate at the apex, the anther and stigma ventral, the foot 1 mm long with a pair of tuberosities or calli near the middle.

FRENCH GUIANA: Monte de Kaw, alt. ca. 100 m, *C. Feuillet 2906* (Holotype: CAY), C. Luer illustr. 18679.

This species is closely allied to the variable and frequent *Specklinia grobyi-picta* complex, but it is distinguished from the later by the much smaller habit; a loose, two- to three-flowered raceme less than three centimeters long; and sepals that are thickened at slightly acuminate, sharply acute apices. The lip is simple and oblong.

Specklinia flosculifera (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Bas.: *Pleurothallis flosculifera* Luer, Lindleyana 14: 113, 1999.

Ety.: From the Latin *flosculifera*, "bearing a small flower," referring to the inflorescence.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1.5-2 mm long, enclosed by 1-2 loose, tubular sheaths. **Leaves** coriaceous, elliptical, subacute to obtuse, 4-7.5 mm long, 2.5-3.5 mm wide, cuneate below into a petiole less than 1 mm long. **Inflorescence** a congested, successively few-flowered fascicle of pedicels, borne by a slender peduncle 10-15 mm long, from near the middle of the ramicaul; floral bracts thin, imbricating, 1.5 mm long; pedicels 1.5-2 mm long; ovary 0.4 mm long; flower white; **sepals** membranous, subcarinate, glabrous, the dorsal sepal narrowly oblong-ovate, acute, concave, 2.75 mm long, 1 mm wide, faintly 3-veined, the lateral sepals connate to the apex into an ovate, acute, concave synsepal, 2.5 mm long, 2 mm wide, expanded, 2-veined, forming a small mentum with the column-foot; **petals** membranous, obovate-spathulate, obtuse, 1 mm long, 0.6 mm wide, 1-veined, narrowed below to the subunguiculate base; **lip** oblong with erect, broadly rounded sides below the middle, 1.5 mm long, 0.5 mm wide unexpanded, 0.8 mm wide expanded, the apex rounded, the disc featureless, the base truncate, hinged broadly to the end of the column-foot; **column** broadly winged near the middle, 0.75 m long, the foot 0.5 mm long, with the anther apical and stigma ventral.

DOMINICAN REPUBLIC: **Santiago-Rodriguez**: in woods along Mao river, El Aguacate, La Leonor, Monción, alt. 450 m, 14 Oct. 1969, *A.H. Liogier 16323* (Holotype: NY).

This single collection made by Bro. Liogier in the Dominican Republic and deposited at NY has had three determinations: *Pleurothallis helenae* [=*Muscarella helenae* (Fawc. & Rendle) Luer], *P. grisebachiana* [= *Specklinia griesebachiana* (Cogn.) Luer], and *P. curtisii* [=*S. curtisii* (Dod) Pridgeon & M.W.Chase]. It is a tiny, tufted species similar to many others, but it is immediately distinguished from all others known from Hispaniola by the fascicle of pedicels borne by a filiform peduncle beyond very small, elliptical leaves. The only other species with congested pedicels borne by an elongated peduncle known from the Greater Antilles is *S. trichyphis* (Rchb.f.) Luer from Cuba. This type of inflorescence is frequent in both Central and South America. This species is similar to *S. trichyphis*, but the greatest difference is the lip with rounded, erect margins, while the lip of *S. trichyphis* is oblong without erect margins.

Specklinia formondii (Dod) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Bas.: *Pleurothallis formondii* Dod, Moscosoa 3: 116, 1984.

Ety.: Named for Loma Pic Formond, where the species was collected.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, subacute to obtuse, petiolate, 10-17 mm long including a petiole 2-4 mm long, 3-4 mm wide, erose margins not noted, the base narrowly cuneate into the petiole. **Inflorescence** an erect, secund, lax, simultaneously 3- to 4-flowered raceme, to 35 mm long including the slender peduncle 10-20 mm long, borne from near the apex of the ramicaul; floral bracts tubular, 1 mm long; pedicels 1.5 mm long; ovary 0.75 mm long; **sepals** light yellow, membranous, thickened near the apex, glabrous, subcarinate, the dorsal sepal oblong-ovate, acute, 4.5 mm long, 1.6 mm wide, faintly 3-veined, the lateral sepals connate into an ovate, bifid, lamina, forming a mentum with the column-foot, 4 mm long, 2.2 mm wide, 2-veined, the apices acute, free ca. 1 mm; **petals** membranous, glabrous, spathulate, obtuse, 2.5 mm long, 1.8 mm wide, 1-veined; **lip** oblong-subtrilobed, subunguiculate, 2.75 mm long, 1 mm wide, the apex rounded with a prominent, minutely subverrucose callus, the disc shallowly sulcate below the callus and between thickened margins, the margins erect, low, broadly rounded, lobe-like above a broad claw, hinged to the tip of the column-foot; **column** shallowly winged above the middle, 1.5 mm long, the anther and stigma ventral, the foot 1 mm long.

HAITI: Massif de la Hotte, Les Cayes, Formond, alt. 2000 m, 6 Jan. 1983, flowered in cultivation 10 Apr. 1983, *D.D. Dod 893* (Holotype: JBSD; Isotypes: AMES, NY, MO, US), C. Luer illustr. 18848.

This little species is apparently endemic in the mountains of southern Haiti. Although superficially similar to several other small species from Hispaniola, this species is characterized by the few-flowered raceme about twice longer than the leaf. The leaves of the isotype are considerably larger than those described from the holotype. The sepals are acute, thickened near the apex, and the laterals are connate to above the middle. The petals are spathulate and obtuse. Most distinguishing is a rounded, minutely subverrucose callus that occupies the apex of the lip.

Specklinia gracillima (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.
Bas.: *Pleurothallis gracillima* Lindl., Folia Orch. *Pleurothallis* 35, 1859.
Ety.: From the Latin *gracillimus*, "very slender," referring to the habit.

Syn.: *Pleurothallis brevicaulis* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 101, 1920.
Ety.: From the Latin *brevicaulis*, "short-stemmed," referring to the short ramicaul.

Syn.: *Pleurothallis humidicola* Garay, Svensk. Bot. Tidskr. 47: 212, 1953.
Ety.: From the Latin *humidicola*, "dwelling in moist places," referring to the habitat.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-2.5 cm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 5-12 cm long including a petiole 3-4 cm long, 1-2 cm wide, gradually narrowed below into the base. **Inflorescence** an erect, congested, distichous or subsecund, sometimes arching, simultaneously many-flowered raceme, up to 40 cm long including the slender, compressed peduncle 10-20 cm long, from near the apex of the ramicaul; floral bracts oblique, acute, 2-3 mm long; pedicels 3-5 mm long below, to 1.5 mm above; ovary 1-1.5 mm long, minutely subverrucose; **sepals** membranous, subcarinate, glabrous, pale yellow-green or pale green, often striped with purple, the dorsal sepal ovate, acute, 5-7 mm long, 2-3 mm wide, 3-veined, the lateral sepals connate nearly to the apex into an ovate, acute, shortly bifid synsepal, 4.5-7 mm long, 2.5-3.5 mm wide, 4-veined; **petals** translucent greenish white, obovate, obtuse to rounded at the apex, microscopically erose, 1.5-2.5 mm long, 0.75-1 mm wide, 1-veined; **lip** greenish white, sometimes striped with purple, oblong, rounded at the apex, 2.5 mm long, 1 mm wide, the disc shallowly channeled between a longitudinal pair of low calli on the middle third, the base truncate, hinged to the column-foot; **column** suffused with purple, broadly winged above the middle, bidentate at the apex, 2-2.5 mm long, the foot 1 mm long with a pair of rounded calli near the middle, the anther and stigma ventral.

ECUADOR: **Pichincha**: Western declivities of Andes on road to Nanegal, 1857, *W. Jameson s.n.* (Holotype: K); Western slope of Corazón, Río Silante, Aug. 1877, *F.C. Lehmann 109* (W); Guarumal, between Quito and Santo Domingo, alt. ca. 2000 m, 11 Nov. 1939, *E. Asplund 10096* (US); between Chiriboga and San Juán, alt. ca. 2500 m, 28 Oct. 1955, *E. Asplund 18201* (AMES, GB), same data, 31 Dec. 1955 *E. Asplund 18972* (S, US); same area, alt. 2900 m, 22 Oct. 1961, *C.H. Dodson & L.B. Thien 1029* (AMES, MO); same area, alt. 1900-2200 m, 28 Jan. 1977, *G. Harling, U. Eliasson & L. Andersson 14918* (GB); same area, alt. 2400 m, 18 Oct. 1981, *H. Balslev 2110* (AMES, QCA); above Tandapi, alt. 2000 m, 8 Jan. 1986, *C.H. Dodson & P.M. Dodson 16304* (MO); Tandayapi, alt. 1500 m, cultivated at Ecuagenera, Gualaceo, Apr. 2000, *J. Portilla 251* (MO), C. Luer illustr. 19404.
COLOMBIA: **Cauca**: epiphytic in dense forest around Popayán, alt. 1500-1800 m, May, 1871, *F.C. Lehmann 8205* (holotype of *P. brevicaulis* destroyed at B); near Popayán, alt. 5,000 ft., 13 May 1878, *F.C. Lehmann s.n.* (lectotype of *P. brevicaulis* here designated: AMES); Highlands of Popayán, alt. 1600-2100 m, June 1901, *F.C. Lehmann 7080, B.T. 339* (AMES, W); San Antonio, "San José," alt. 2400-2700 m, 1 July 1922, *F.W. Pennell 7588* (AMES, NY); El Tambo, among very wet rocks, alt. ca. 1700 m, without date, *K. von Sneidern 109* (holotype of *Pleurothallis humidicola*: S); El Tambo, Chisquio, alt. ca. 1700 m, *K. von Sneidern 1049* (paratypes: AMES, S); Popayán, alt. 1500-1800 m, 21 Aug. 1881, *F.C. Lehmann 844* (BR).

This species, vegetatively large for this genus, is frequent in the Andes of southwestern Colombia and Ecuador. It is characterized by a long, nearly simultaneously flowered raceme that far exceeds narrow, long-petiolate leaves. The flowers are sometimes striped in purple. The sepals are acute, the petals are obtuse, and the lip is simply oblong. It is like a vegetatively large *Specklinia costaricensis* (Rolfe) Pridgeon & M.W.Chase with which it is sympatric in the Andes.

Specklinia grisebachiana (Cogn.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Bas.: *Pleurothallis grisebachiana* Cogn., Symb. Antill. 6: 409, 1909.

Ety.: Named in honor of A.H.R. Grisebach, German botanist, who listed the species as *Pleurothallis grobyi* in his Catalog of the Plants of Cuba.

Syn.: *Pleurothallis grobyi* sensu Griseb., Cat. Pl. Cuba: 258, 1866, not *Pleurothallis grobyi* Bateman ex Lindl., Bot. Reg. 21: t. 1797, 1836.

Ety.: Mistakenly identified as *P. grobyi* Batem. ex Lindl.

Syn.: *Pleurothallis blepharoglossa* Luer, Lindleyana 14: 111, 1999.

Ety.: From the Greek *blepharoglossa*, "tongue with ciliate margins," referring to the labellum.

Syn.: *Specklinia blepharoglossa* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-6 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, subacute to obtuse, petiolate, 6-14 mm long including a petiole 1.5-3 mm long, the blade 2-3 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** a lax, flexuous, successively 3- to 14-flowered raceme 10-20 mm long, borne by an erect, capillary peduncle 10-25 mm long, from a node on the ramicaul; floral bracts oblique, acute, 1 mm long; pedicels 1.5-2 mm long; ovary 0.5 mm long; **sepals** yellow, membranous, microscopically pubescent toward the apices, subcarinate, the dorsal sepal ovate-triangular, acute, 3.5 mm long, 1.3 mm wide, 3-veined, the lateral sepals connate into an ovate-triangular, obtuse, shortly bifid, shallowly concave lamina, 3.5 mm long, 2 mm wide, 2-veined, forming a shallow mentum below the column-foot, the apices acute, free ca. 0.6 mm, in apposition; **petals** membranous, glabrous, elliptical-obovate, acute, 1.6 mm long, 0.6 mm wide, 1-veined, with the margins microscopically irregular above the middle; **lip** oblong, rounded at the apex, 1.8-2 mm long, 0.75 mm wide, the margins low and erect below the middle, microscopically to finely ciliate, the disc cellular-glandular, shallowly concave between low, longitudinal calli near the middle, sometimes with a midline callus, the base subtruncate, hinged to the tip of the column-foot; **column** bright purple toward the base, winged above the middle, 1.5 mm long, dentate at the apex, the anther and stigma ventral, the foot 1 mm long.

CUBA: Oriente: San André near Monte Verde, Jan.-July 1859, *C. Wright 1503* (Holotype: K; Isotypes: AMES, BM, BR, BREM, HAC, NY, W), C. Luer illustr. 18797. Santa Clara, Trinidad Mts., Los Cocos, near Siguanea, alt. 430 m, 5-6 Mar. 1910, *N.L. Britton & P. Wilson 5061* (AMES). Guantanamo: Monte Verde, alt. ca. 2,200 ft., 30 Dec. 1960, *M. López F. 2548, 2563* (HAJB); Loma del Gato, alt. 1,000 ft., 11 July 1921, *Bros. Leon, Clement & M. Roic 1024* (HAC); Guantanamo: Santo del Frijol, alt. 900 m, 12 May 1983, *Figueiras, Bisse, et al. 2548* (HAJB); Guantanamo: Imías, Sierra de Imías, falda oeste de la Loma de Majagua Hueco, alt. 600 m, 16 Apr. 1984, *J. Bisse et al. s.n.* (HAJB). **Holguín**: near Moa Bay, 17 Apr. 1946, *Bro. Clemente 5006* (AMES). **Santa Clara**: Trinidad Mts., Los Cocos, near Siguanea, 5 Mar. 1910, *N.L. Britton & P. Wilson 5061* (NY); mountains of Siguania, Río Hanabarrilla, alt. 600 m, 14 Feb. 1924, *E.L. Ekman 18478* (S). Holguín: Mayarí, Sierra Cristal, Río Lebisa, 2-7 Apr. 1956, *Bro. Alain, J. Acuña & M. López F. 5756* (HAC, HAJB); Sierra de Nipe, Río Piloto, 4 Nov. 1914, *E.L. Ekman 3360* (S); alt. 600-700 m, 16 Oct. 1941, *C.V. Morton & J. Acuña 3233* (HAC, US); Arroyo de la Caridad, 25 Nov. 1954, *M. López F. 1666* (HAC, HAJB); Cayo de Sabinas, east of La Mensura, 20 Apr. 1960, *Bro. Alain & J. Acuña 7867, 7903* (HAC, HAJB); Moa, camino al Toldo, Alto de Calinga, alt. 800-1000 m, 4 June 1980, *A. Alvarez et al. s.n.* (HAJB); Moa, camino a La Melba, Arroyo Las Comadres, alt. 350 m, 29 Nov. 1997, *C. Luer, J. Luer, M. Diaz, J. Llamacho, J. Ackerman, R. & K. Dressler 18654* (holotype of *P. blepharoglossa*: HAJB; isotype: MO). Yunque de Baracoa, alt. 520 m, 2 Jan. 1960, *Bro. Alain, & M. López F. 7192* (HAC). Cienfuegos: Sierra del Escambray, lomas al sur del Pico San Juan, 8 Nov. 1987, *I. Arias et al. s.n.* (HAJB). Plant from Soledad, flowered in cultivation in O. Ames's greenhouse, Mar. 1905 (K).

DOMINICAN REPUBLIC: **Barahona**: Loma La Haut, alt. 600-1300 m, 26 Feb. 1922, *W.L. Abbott 1890* (US); La Cidra, alt. 880 m, 8 Apr. 1955, *J. Jiménez 2951* (US). Santiago: Monción, alt. 800 m, 18 June 1929, *E.L. Ekman 12892* (US); sine loc., collected with Donald Dod, flowered in cultivation by P. Jesup in Bristol, CT, 1 June 1997, *C. Luer 18516* (MO).

This tiny species was collected in Cuba by Wright and identified as *Pleurothallis grobyi* [=*Specklinia grobyi* (Bateman ex Lindl.) F.Barros] by Grisebach in his catalog of the flora of Cuba. Noting the misidentification, Cogniaux named the species for Grisebach. It is indeed closely related to *S. grobyi*, but differing in several respects. The habit and flowers are much smaller. The leaves are narrowly elliptical and usually less than 1.5 cm long; the capillary peduncle, longer than the leaves, bears a flexuous, successively flowered raceme; the dorsal sepal is acute, the laterals are connate to near the apices; the petals are narrowly acute; and the callous, oblong lip is similar. The cilia of the lip vary from microscopic on the type-flower

to long [*S. blepharoglossa* (Luer) Luer]. The calli on the column-foot, so prominent in *S. grobyi*, are reduced to small areas of minimal thickening in this species.

Specklinia schaferi (Ames) Luer is also closely related to *S. grisebachiana*, but it differs from the former by shorter, two- to three-flowered racemes, nearly free lateral sepals and a glabrous lip.

Specklinia grobyi (Bateman ex Lindl.) F.Barros, Hoehnea 10: 110, 1983.

Bas.: *Pleurothallis grobyi* Bateman ex Lindl., Bot. Reg. 21: t. 1797, 1836.
Ety.: Named for Lord Grey of Groby who successfully cultivated plants imported by Mr. Bateman.

Syn.: *Pleurothallis marginalis* Rchb.f., Bonplandia 3: 224, 1855.
Ety.: From the Latin *marginalis*, "margined," referring to the leaves.

Syn.: *Pleurothallis perplexa* Rchb.f., Hamb. Gartenzeitung 16: 15, 1860.
Ety.: From the Latin *perplexus*, "uncertainty," possibly because of his not knowing what to do with it.

Syn.: *Pleurothallis trilineata* Barb.Rodr., Orch. Nov. 1: 6, 1877, not Lindl. 1859.
Ety.: From the Latin *trilineatus*, "three-lined," referring to the sepals.
Syn.: *Lepanthes trilineata* (Barb.Rodr.) Barb.Rodr., Orch. Nov. 2: 42, 1882.

Syn.: *Lepanthes marmorata* Barb.Rodr., Orch. Nov. 2: 42, 1882.
Ety.: From the Latin *marmoratus*, "mottled, marbled," referring to the leaves.

Syn.: *Pleurothallis crepidophylla* Rchb.f., Otia Bot. Hamburg. 18, 1878.
Ety.: From the Greek *crepidophyllus*, literally "shoe-shaped-leaved," without a reference.

Syn.: *Pleurothallis choconiana* S. Watson, Proc. Amer. Acad. 23: 285, 1888.
Ety.: Named for the forests of Chocón in Guatemala, where the species was collected.

Syn.: *Humboldtia crepidophylla* (Rchb.f.) Kuntze, Rev. Gen. Pl. 668, 1891.
Syn.: *Humboldtia grobyi* (Lindl.) Kuntze, Rev. Gen. Pl. 667, 1891.
Syn.: *Humboldtia marginalis* (Rchb.f.) Kuntze, Rev. Gen. Pl. 668, 1891.

Syn.: *Pleurothallis marmorata* (Barb.Rodr.) Cogn., Fl. Bras. 3(4): 490, 1896.

Syn.: *Pleurothallis pergracilis* Rolfe, Bull. Misc, Inform. 334, 1893.
Ety.: From the Latin *pergracilis*, "very slender," referring to the habit.

Syn.: *Pleurothallis grobyi* var. *trilineata* (Barb.Rodr.) Cogn., Fl. Bras. 3(4): 496, 1896.

Syn.: *Pleurothallis barbosae* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 143, 1921, replaced name for *P. trilineata* Barb.Rodr.
Ety.: Named for Barbosa Rodrigues, author of *P. trilineata*.

Syn.: *Pleurothallis biglandulosa* Schltr., Notizbl. Bot. Gart. Berlin 8: 119, 1921.
Ety.: From the Latin *biglandulosus*, "with two glands," referring to the column-foot.

Syn.: *Specklinia marginalis* (Rchb.f.) F.Barros, Hoehnea 10: 10, 1984.
Syn.: *Specklinia biglandulosa* (Schltr.) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-10 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, sometimes suffused or spotted with purple, narrowly elliptical to narrowly obovate, subacute to obtuse, petiolate, 2-5 cm long including a petiole 0.5-2 cm long, 0.5-1.5 cm wide, the base narrowly cuneate into the petiole. **Inflorescence** a lax, distichous, more or less flexuous, usually simultaneously-flowered raceme 3-15 cm long, borne by a suberect, slender peduncle 3-10 cm long, from a node on the ramicaul; floral bracts oblique, acute, 1-2 mm long; pedicels 2-3 mm long; ovary 1-1.5 mm long; **sepals** pale yellow, sometimes lightly veined in purple, sometimes suffused with rose, membranous, glabrous, carinate, the dorsal sepal ovate, acute, 3-6 mm long, 2-2.5 mm wide, 3-veined, the lateral sepals connate to near the apex into an elliptical or obovate, obtuse, shallowly concave synsepal, 4-7 cm long, 2.5-3 cm wide, 2-veined, forming a shallow mentum below the column-foot; **petals** membranous, translucent, glabrous, elliptical, oblique, subacute, 1.25-2 mm long, 0.5 mm wide, 1-veined; **lip** oblong, sometimes dilated above the middle, rounded at the apex, 1.75-2.5 mm long, 0.75-1 mm wide, shallowly concave centrally between a pair of low, longitudinal calli, the base subtruncate, hinged to the tip of the column-foot; **column** broadly winged above the middle, 1.75-2 mm long, bidentate at the apex, the anther and stigma ventral, the foot 1 mm long with a pair of tuberosities or calli near the middle.

The following are only representative collections selected from hundreds:
GUYANA: Demerara, cultivated by Lord Grey of Groby, *Bateman s.n.* (Holotype: K).
SURINAME: sine loc., *C. Feuillet 2906* (CAY).
FRENCH GUIANA: Montagne de Kaw, alt. 280-300 m, 12 May 1986, *C. Luer & J. Luer 12230* (MO).
BRAZIL: **São Paulo**: Comm. Geogr. & Geol., rec. *Löfgren 1283, 1913* (BR); Itatinga, *Alex. Hummel s.n.* (BR). **Rio de Janeiro**: *Glaziou 7315* (BR); sine loc., *Glaziou 122* (BR); Corcovado, Feb. 1869, *Glaziou 3818* (BR). **Minas Gerais**: Capões des champs du Tamanduá, *Barbosa Rodrigues s.n.* (holotype of *P. trilineata* is Rodrigues's illustr.); Serra de Pedra Branca near Caldas, *Barbosa Rodrigues s.n.* (holotype of *P. marmorata* is Rodrigues's illustr.), Serra do Capusão, June 1888, *J.T. de Moura 321* (BR). **Paraná**: sine loc., *P. Dusén s.n.* (holotype of *P. biglandulosa* destroyed at B); São José dos Pinhaes, 11 Nov. 1982, *R. Kummrow 2084* (BR); Lapa, São Carlos, 13 Aug. 1982, *P.I. Oliveira 629* (Curitiba, BR).
BOLIVIA: **La Paz**: Nor Yungas, above Yolasa toward Chuspipata, alt. 1850 m, 21 Jan. 1988, *C. Luer et al. 12912* (MO). **Cochabamba**: Villa Tunari, Hotel Sumuque, alt. 350 m, 30 Jan. 1997, *C. Luer et al. 18309* (MO). **Santa Cruz**: collected by Dr. Moreno near Santa Cruz, alt. 600, 3 Feb. 1988. *C. Luer & R. Vásquez 12981* (MO).
PERU: **Cajamarca**: Contmazá, Bosque Cachil, alt. 2400 m, 17 May 1993, *M.O. Dillon et al. 6497* (F, MO); same area, alt. 2500 m, 13 Apr. 1995, *A. Sagástegui et al. 15566* (HAO, MO).
ECUADOR: **Sucumbíos**: Imuya Cocha, along Río Lagartococha, upstream from Río Aguarico, alt. 200 m, 20 Oct. 1991, *C. Dodson, G. Romero & P. Dodson 18917* (MO). **Esmeraldas**: between Lita and San Lorenzo, alt. 200 m, 25 Jan. 1996, *A. Hirtz, X. Hirtz & J. del Hierro 6270* (MO). **Napo**: Bermejo, alt. 450-600 m, Apr. 1990, *A. Hirtz 4834* (MO); Río Jatunyacu, alt. 900 m, Apr. 2004, *A. Hirtz 8705* (MO). **Tungurahua**: San Francisco, alt. 1500 m, Nov. 1983, *A. Hirtz 1374* (MO).
Morona-Santiago: Cordillera del Cutucú, east of Méndez, alt. 700 m, 5 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12638* (MO); along Río Yanguza between Río Zamora and Limón, alt. 1200 m, 22 Oct. 1999, *A. Hirtz, E. Sánchez & S. Marin 7057* (MO). **Azuay**: Río de Chimbo, alt. 700 ft., Alausí, 1877, *F.C. Lehmann L IV* (holotype of *P. crepidophylla*: W); west of pass between Gualaceo and Limón, alt. 2850 m, 5 Mar. 1992, *S. Dalström 1612* (MO); scrub vegetation above Cumbe, alt. 3000 m, 6 Mar. 2001, *C. Luer et al. 19783* (MO). **Loja**: army road to antenna east of Yangana, alt. 2400 m, 22 Mar. 1985, *C. Luer, J. Luer & A. Hirtz 10812* (MO); valley near El Cisne, alt. 2350 m, 26 Feb. 1986, *C. Luer, J. Luer & A. Embree 12037* (MO). **El Oro**: south of Piñas, alt. 950-1000 m, 20 Mar. 1985, *C. Luer, J. Luer & A. Hirtz 10670* (MO); old road west of Pacha, alt. 1850 m, 23 May 1988, *C. Luer, A. Hirtz et al, 13612* (MO).
COLOMBIA: **Valle de Cauca**: near Buenventura, 16 Aug. 1880, *F.C. Lehmann 48* (W); Corrales, east slope of Volcán Puracé, alt. 8,500 ft., 20 May 1878, *F.C. Lehmann s.n.* (W); above Barbacoas, alt. 300 m, 14 July 1879, *F.C. Lehmann s.n.* (W). **Caquetá**: Caquetá, Solita, alt. 600 m, collected by J. Aguirre, flowered in cultivation at Colomborquídeas, 15 Dec. 1992, *R. Escobar 5051* (MO).
VENEZUELA: Río Icabarú, below confluence with Río Uaiparú, June 1957, *G.C.K. Dunsterville 415.*
PANAMA: **Bocas del Toro**: between Fortuna and Chiriqui Grande, alt. 100 m, 17 Feb. 1985, *C. & J. Luer, R. & K. Dressler 10600* (MO). **Panama**: Gatun Lake, sea level, fall 1916, *C.W. Powell 106* (AMES).
COSTA RICA: sine loc., alt. 3,000 ft., 1868, *A. Endres 25* (illustr. at W). **Puntarenas**: Reserva Forestal Golfo Dulce Aguabuena, Rincón de Osa, alt. 50-150 m, 10 Aug. 1991, *R. Aguilar 245* (CR, MO).
GUATEMALA: **Alta Verapaz**: forests of Chocón, 25 Mar. 1985, *S. Watson s.n.* (holotype of *P. choconiana*: AMES); *Esquintla*: alt. 1100 m, Mar. 1890, *J.D. Smith 2253* (BR); sine loc., cultivated by A. Béhar in Ciudad Guatemala, 18 Feb. 1990, *C. Luer 14690* (MO).
EL SALVADOR: Perquín, alt. 1600 m, *F. Hamer 13* (SEL).
NICARAGUA: **Zelaya**: from plantel El Salto to Bonanza, alt. 140 m, *D. Stevens 18815* (MO).
BELIZE: sine loc., received from the Belise EState and Produce Company, 1887, flowered in cultivation at K (type of *P. pergracilis*: K); New Town, 25 Aug. 1932, *W.A. Schipp 918* (K).
MEXICO: **Vera Cruz**: Mirador, 1841-42, *F.M. Liebmann 7311; 132* (C); Mirador, Jan. 1840, *F.M. Liebmann 133* (holotype of *P. perplexa*: W; isotype: C); Jan. 1907, *C.A. Purpus s.n.* (AMES). Tabasco: Balancan, 22 June 1939, *E. Matuda 3150* (AM0, K). **Chiapas**: Ococingo, Río Chixoy, road to Chajul, alt. 150 m, 10 Sept. 1985, *E.M. Martínez 13571* (AMO, BM, K); sine loc., flowered in cultivation at the Hamburg Botanical Garden (holotype of *P. marginalis*: W); sine loc., flowered in the collection of *Consul Schiller s.n.* (holotype of *P. perplexa*: W).

Two collections made near Demerara in what was British Guyana were described and published simultaneously by Lindley in 1835 as *Pleurothallis grobyi* [=*Specklinia grobyi* (Bateman ex Lindl.) F.Barros] and *P. picta* [*S. picta* (Lindl) Pridgeon & M.W. Chase. Differences between the two concedpts are meager, and

when extensive collecting proved the two to be widely distributed, and with numerous intermediates, they became known as a species-complex. As such, the *S. grobyi-picta* complex is the most widely distributed taxon in the Pleurothallidinae. Practically all hobbyists and growers of orchids are familiar with the pair, which are treated here as two variable and intermingled species. Perhaps Garay was right (*Venezuelan Orchids Illustrated, 2: 278-280, 1961*) when he reduced *P. picta* and numerous others to the synonymy of *Pleurothallis grobyi* [=*S. grobyi*]. Because the extremes are recognizable, they will be treated individually. However, determinations are often faulty, so that all the accompanying citations cannot be accurate. Some variations from Brazil that are also recognizably different will be treated in a future *Icones Pleurothallidinarum*. Populations occur from near sea level to over 2500 meters above sea level, from Mexico to southern Brazil. On the island of Hispaniola it has been identified as *P. grisebachiana* [=*Specklinia grisebachiana* (Cogn.) Luer]. Misidentifications of other species (i.e. *S. grisebachiana*) account for some identifications from Cuba.

The complex of two intergrading but identified species (*Specklinia grobyi* and *S. picta*) is distinguished by a small, clumped plant with narrow, short-stemmed leaves, and a more or less flexuous, simultaneously-flowered raceme surpassing the leaves. The pale-colored flowers are small and bilabiate. The synsepal of *Specklinia grobyi* is subacute to obtuse, albeit often minutely bifid; the synsepal of *S. picta* is acuminate and acute, usually with a purple stripe. Both taxa have simple petals and lip, and near the middle of the column-foot is a pair of calli that are usually conspicuous, even pedunculated. Similar calli are found on numerous closely, as well as more distantly related species.

Specklinia jesupii (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Bas.: *Pleurothallis jesupii* Luer, Lindleyana 14: 116, 1999.

Ety.: Named in honor of H. Phillips Jesup of Bristol, CT, who collected this species in the Dominican Republic with the Rev. Don Dod.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-8 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute to obtuse, petiolate, 12-20 mm long including a petiole 2-5 mm long, 2.5-3 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, successive, distantly 2- to 3-flowered raceme, 3.5-4 cm long including the slender peduncle ca. 2.5 cm long, borne from near the apex of the ramicaul; floral bracts tubular, 1.5 mm long; pedicels 3-4 mm long; ovary 1 mm long; **sepals** light yellow-green, membranous, glabrous, subcarinate, the dorsal sepal narrowly ovate, acute, 6 mm long, 2.25 mm wide, 3-veined, the lateral sepals connate into a narrowly triangular, acute, shallowly concave lamina, very shortly bifid with the tips acute, 6 mm long, 2.75 mm wide, 2-veined, forming a small mentum below the column-foot; **petals** membranous, glabrous, elliptical, subacute to acute, 2.5 mm long, 0.5 mm wide, 1-veined; **lip** oblong, rounded at the apex, 2.5 mm long, 0.75 mm wide, the disc sulcate between a pair of low, narrow, longitudinal calli from the base to above the middle, the base subtruncate, hinged to the tip of the column-foot; **column** winged above the middle, 1.5 mm long, the anther and stigma ventral, the foot 1 mm long, with faintly thickened margins near the middle.

DOMINICAN REPUBLIC: sine loc., collected ca. 1970 with D. Dod, flowered in cultivation in Bristol, CT, by Jesup, Dec. 1987, *C. Luer 12843* (holotype: MO); same collection, flowered in cultivation, 1 June 1997, *C. Luer 18516* (MO).

This little species is similar to the numerous taxa that are commonly grouped into the *Specklinia grobyi-picta*-complex. *Specklinia jesupii* is distinguished by smaller habit with narrowly obovate leaves with short ramicauls, and a distantly two- or three-flowered raceme borne by a peduncle that reaches above the leaves.

The pale yellow-green and membranous sepals are narrowly triangular, and the petals are narrow and acute. The lip is narrowly oblong and longitudinally channeled between a pair of narrow calli that extend from the base to above the middle. The lip of the *S. grobyi-picta*-complex is proportionately wider, and shallowly sulcate between callous halves of the lip. The column-foot of members of the *S. grobyi-picta*-complex has a pair of more or less conspicuous, rounded calli, one on either side of the middle of the foot. These calli are seen on numerous related species (i.e. *S. schaferi* (Ames) Luer and *S. recula* (Luer) Luer. Only very slight thickenings are found on the margins of the column-foot of *S. jesupii*. If not sought, they will not be seen.

Specklinia lanceola (Sw.) Lindl., Gen. Sp. Orch. 8, 1830.

Bas.: *Epidendrum lanceolum* Sw., Nov. Gen. Sp. Prodr. 123, 1788.
Ety.: From the Latin *lanceolus*, "little lance-like," referring to the leaves.

Syn.: *Dendrobium lanceolum* (Sw.) Sw., Nov. Act. Upsal. 6: 83, 1799.
Syn.: *Cymbidium lanceolum* (Sw.) Sw., in Schrad. N. Journ. Bot. 1: 94, 1805.
Syn.: *Pleurothallis lanceola* (Sw.) Spreng., Syst. 3: 731, 1826.

Syn.: *Pleurothallis lateritia* Rchb.f., Gard. Chron. 731, 1872.
Ety.: From the Latin *lateritius*, "brick red," referring to the flowers.

Syn.: *Pleurothallis sclarea* Rchb.f., Linnaea 41: 49, 1877.
Ety.: unknown. Possibly an error in transcribing "scarlea," meaning "scarlet."

Syn.: *Specklinia lateritia* (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.
Syn.: *Specklinia sclarea* (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4-6 mm long, enclosed by 2 ribbed, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, obtuse, 20-30 mm long, 4-7 mm wide, narrowly cuneate below into an ill-defined petiole 5-10 mm long. **Inflorescence** a lax, simultaneously 2- to 3-flowered raceme, 25-50 mm long, including the slender peduncle 20-30 mm long, emerging laterally from the ramicaul; floral bracts 2-3 mm long; pedicels 5-7 mm long; ovary winged, 1 mm long; **sepals** red, glabrous, carinate, the dorsal sepal ovate, obtuse, concave, 5-7 mm long, 3-3.5 mm wide, 3-veined, the lateral sepals connate at the base, oblong, subacute, 5-7 mm long, 2-2.5 mm wide; **petals** translucent red, obovate, oblique at the obtuse apex, 2-2.5 mm long, 0.8-1.25 mm wide; **lip** red, thick, elliptical-obovate, arcuate, 2.75-3.25 mm long, 1-1.25 mm wide, rounded at the apex, the disc shallowly channeled between a pair of low, longitudinal calli, the base truncate, hinged to the column-foot; **column** semiterete with narrow, marginal wings, 2 mm long, the foot 1.5 mm long, with the anther shortly hooded and the stigma ventral.

JAMAICA: sine loc., *O. Swartz s.n.* (Holotype of *Epidendrum lanceola*: S; Isotypes: BM, W). Sine loc., Nov. 1881, *J.T. Syme & D. Morris 231* (K, NY); St. George, *J.T. Syme & D. Morris 171* (NY). Portland: near Mabess River, alt. 3,000 ft., 22 Nov. 1898, *W. Harris 7467* (BM); *W. Harris 7742* (BR); Mt. Moses, *J.T. Syme 2091* (NY); Shingle Heap, 6 Feb. 1895, *W. Harris s.n.* (NY). Mabess River, below Vinegar Hill, 9 Feb. 1903, *L.M. Underwood 1394* (NY). St. Thomas: Stone Hole Bump, alt. 600-800 m, 9 June 1926, *W.R. Maxon 9026* (AMES, NY, US); Maccasucker Bump, alt. 825-1025 m, 25 June 1926, *W.R. Maxon 9536* (AMES, NY, US). Mabess River, alt. 2,500 ft., 25 July 1903, *G.E. Nichols 140* (AMES, US). Sine loc., collected by P. Jesup, flowered in cultivation at Bristol, CT, June 1985, *C. Luer 11395* (SEL).
COSTA RICA: sine loc., alt. 4,000 ft., 1868, *A. Endres 52* (holotype of *P. lateritia*: W; flowers at AMES, K); sine loc., obtained from L. Glicenstein by P. Jesup, flowered at Bristol, CT, 17 Nov. 1977, *C. Luer 2216* (SEL). **Heredia**: Vara Blanca de Sarapiqui, alt. 1500-1750 m, July 1937, *A.F. Skutch 3290* (AMES, K); Vara Blanca, Sept. 1979, *C. Luer, J. Luer & K. Walter 4864* (SEL). **San José**: Parqué Nacional Braulio Carrillo, alt. 700-760 m, 16 Feb. 1984, *M.W.Chase 84219* (CR).
MEXICO: **Vera Cruz**: woods near Huatusco, alt. 3,000 ft., Sept. 1954, *Florence Johnson 954-17* (AMES).
Sine loc., flowered in cultivation at K, 29 Oct. 1876, (holotype of *Pleurothallis sclarea*: W).

This species is uncommon in Jamaica where it was first collected by Swartz. A subsequent, indistinguishable collection was made in Costa Rica by Endres, and it flowered in cultivation at the Hamburg Botanical Garden. Collections from both

Jamaica and Costa Rica are characterized by a small, caespitose habit, a short ramicaul, and lax racemes of two- to three brick-red flowered racemes about as long as the leaves. The sepals and petals are obtuse, and the simple lip is arcuate and shallowly channeled. There is no significant distinction between the two plants.

One flower of a plant without data was sent from Kew to Reichenbach in a letter by Oliver [of *Porroglossum muscosum* (Rchb.f.) Schltr.-fame] that is still in the Vienna herbarium.

"24 Jan. 1876
My dear friend
. . . can tell me this tiny wretch I . . . off hand, the only flower on the spec. Looks like an old Specklinia Caespitose Apod.
Ever yours
D. Oliver"

Reichenbach obliged Oliver by describing it in *Linnaea* as *Pleurothallis sclarea* Rchb.f., comparing it to his *P. lateritia* Rchb.f. He stated that the capillary peduncle was "single-flowered"; that the conspicuous flower was a beautiful cinnabar color; that the petals were half as long as the sepals; and that the lip was linear ligulate. The crude sketch with an obovate lip sent by Oliver is most compatible with *P. lateritia*, the Central American plant inseparable from the Jamaican *P. lanceola* [=*Specklinia lanceola* (Sw.) Lindl.], but it could even have been *S. lanceola* itself.

Specklinia lichenicola (Griseb.) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.
Bas.: *Pleurothallis lichenicola* Griseb., Cat. Pl. Cuba 259, 1866.
Ety.: From the Latin *lichenicola*, "lichen dwelling," referring to the habitat.

Syn.: *Pleurothallis gemina* Stenzel, Lindleyana 16(1): 28, 2001.
Ety.: From the Latin *geminus*, "twined, paired," referring to the two-flowered raceme.

Plant very small, epiphytic, densely caespitose to shortly repent; roots slender but proportionately thick. Ramicauls erect, 1-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, subacute to obtuse or rounded at the apex, subpetiolate, 5-7 mm long including a petiole less than 1 mm long, 2.5-3.5 mm wide, 1.5 mm thick, the base broadly cuneate into the petiole. **Inflorescence** a single flower, or a loosely 2-flowered raceme, borne by an erect peduncle 2-3 mm long, from a node on the ramicaul; floral bract tubular, 1-2 mm long; pedicels 0.5-2 mm long; ovary 0.5-2 mm long; **sepals** white, sometimes suffused with red at the thickened tips, fleshy, glabrous, the dorsal sepal ovate, narrowly obtuse, 2.5-3.5 mm long, 1-1.3 mm wide, 3-veined, the lateral sepals oblong, obtuse, 2.5-3.5 mm long, 1-1.3 mm wide, barely 2-veined, forming a shallow mentum below the column-foot, connate to near the middle; **petals** membranous, glabrous, narrowly obovate, obtuse, 2-2.75 mm long, 0.3-0.5 mm wide, 1-veined; **lip** red-purple, thick, elliptical-oblong, rounded at the apex, 1.75-2 mm long, 0.75 mm wide, the disc shallowly channeled centrally between thickened halves, the base subtruncate, hinged to the tip of the column-foot; **column** narrowly winged above the middle, 1.25 mm long, dentate at the apex, the anther and stigma ventral, the foot 0.75 mm long with a pair of low, indistinct, marginal calli.

CUBA: Oriente, near Monte Verde, Jan.-July 1859, *C. Wright 1507* (Holotype: W; Isotype: K); Turquino, 26 June 1936, *J. Acuña 11207* (HAC). **Holguín**: Sierra Cristal, between Los Mulos and Corea, alt. 630 m, 27 Aug. 1959, *M. López F. 245* (HAC); Sierra de Nipe, La Caridad, 22 Apr. 1960, *Bro. Alain, A. Acuña & Ramos 8115* (HAC); Loma Mensura, Sierra de Nipe, alt. 950 m, 26 Nov. 1997, culivated by P. Jesup in Bristol, CT, 28 June 1998, *C. Luer, J. Luer, M. Díaz, J. Llamacho, J. Ackerman, K. & R. Dressler 18637* (MO); same locality, alt. 850 m, 24 Apr. 1998, *H. Stenzel & A. Matos Viñales 452* (holotype of *P. gemina*: HAJB; isotype: JE). **Guantanamo**: Imías, Sierra de Imías, La Yamagua, Loma Maestra de Yamagua, alt. 750-850 m, 14 Apr. 1984, *J. Bisse et al. s.n.* (HAJB). HAITI: Formond, May 1982, *D. Dod 2-F* (SEL), C. Luer illustr. 8066, 8067.

This species is one of smallest of those species similar to the *Specklinia grobyi-picta* complex. It is relatively frequent, forming dense mats on trunks and branches of trees. A usually single (occasionally followed by a second) tiny white flower with a red lip is borne no higher than the thick, broadly elliptical leaves by a short peduncle. The sepals are white or light yellow, and thickened at the narrowly obtuse apex. The petals are narrowly spathulate. The lip is red-purple, thick and oblong, shallowly channeled, and convex at the recurved apex. As in *S. grobyi* and its relatives, a pair of small calli, albeit indistinct, are present on the margins of the column-foot. *Pleurothallis gemina* [=*S. lichenicola* (Griseb.) Pridgeon & M.W.Chase differs in bearing two flowers simultaneously instead of usually successively.

Specklinia lichenicola is similar to *S. schaferi* (Ames) Luer, which is distinguished by a three- or four-flowered raceme held above the leaves by a longer peduncle. Collections from Haiti differ in thicker tips of the sepals.

Specklinia luis-diegoi (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Bas.: *Pleurothallis luis-diegoi* Luer, Rev. Soc. Bol. Bot. 3: 55, 2001.

Ety.: Named for Dr. Luis Diego Gómez at that time of the Wilson Botanical Garden, Cotobrus, Costa Rica, co-collector of this species.

Plant very small, epiphytic, subcaespitose, shortly repent, the rhizome 1-2 mm long between ramicauls; roots thicker than the rhizome. Ramicauls slender, erect to suberect, 1-2 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, elliptical-obovate, subacute to obtuse, with red-brown dots, 4-9 mm long including the petiole ca. 1 mm long, 3-4 mm wide, the base cuneate into the petiolate base. **Inflorescence** a fascicle of solitary, successive flowers, large for the plant, borne in a congested raceme by capillary peduncle, 18-25 mm long, laterally from the ramicaul; floral bracts very close, sometimes imbricating, 1.5 mm long; pedicels 4 mm long; ovary 1 mm long; **sepals** membranous, glabrous, described as orangish, the dorsal sepal ovate, acute, 9.5 mm long, 4 mm wide, 3-veined, connate to the lateral sepals for 1 mm, the lateral sepals connate into an ovate, acute, minutely bifid synsepal, 9.5 mm long, 5 mm wide, 4-veined; **petals** translucent, obovate-spathulate, obtuse, 3.5 mm long, 0.75 mm wide, 1.5 mm wide near the apex; **lip** elliptical, slightly arcuate, 4 mm long, 2 mm wide, the apex rounded, minutely denticulate-erose, the disc featureless, 3-veined, the base truncate, concave on the end, articulated to the column-foot; **column** slender, narrowly winged, 2 mm long, the foot nearly as long with a pair of minute auricles at the base, the anther exposed but ventral as are the rostellum and stigma.

COSTA RICA: **Limón**: Asunción, Río Segundo, alt. 300 m, 2 May 1985, *L.D. Gómez, G. Herrera & J. Berrocal 23611* (Holotype: CR; Isotype: MO), C. Luer illustr. 19316.

This tiny species is apparently endemic in the Atlantic lowlands of Costa Rica. It is characterized by the minute, shortly repent habit that superficially appears to be caespitose. The capillary peduncles bear a congested, successively flowered raceme, like a tiny brush, far above minutely purple-speckled leaves. The flower is comparatively large, larger than the leaves. The dorsal sepal is ovate; the synsepal is minutely notched at the tip; the petals are spathulate; and the lip is elliptical with a minutely denticulate, rounded apex. A minute pair of rounded calli are present at the base of the column-foot.

Specklinia microphylla (A.Rich. & Galeotti) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Bas.: *Pleurothallis microphylla* A.Rich. & Galeotti, Ann. Sci. Nat. ser. 3, 3: 17, 1845.

Ety.: From the Greek *microphyllon*, "small leaf," referring to the leaves.

Syn.: *Humboldtia microphylla* (A.Rich. & Galeotti) Kuntze, Gen. Sp. Pl. 2: 668, 1891.

Syn.: *Pleurothallis rotundifolia* Rolfe, Bull. Misc. Inform. 191, 1895.

Ety.: From the Latin *rotundifolius*, "with round leaves," referring to the leaves.

Syn.: *Pleurothallis panamensis* Schltr., Repert. Spec. Nov. Regni Veg. 17: 140, 1921.

Ety.: Named for Panama, the country where the species was collected.

Plant small, epiphytic, repent, the rhizomes 1-5 mm long between ramicauls; roots slender. Ramicauls slender, suberect, 1-10 mm long, enclosed by 2-3 tubular sheaths. **Leaf** suberect to prostrate, coriaceous, more or less mottled with purple, occasionally subverrucose, broadly ovate to subcircular, obtuse to rounded at the apex, 4-10 mm long including a petiole less than 1 mm long, 3-7 mm wide, broadly cuneate to rounded below; **Inflorescence** an erect or suberect, lax, more or less simultaneously few-flowered raceme 3-7 cm long, including the 2-4 cm long peduncle, from near the base of the ramicaul; floral bracts 1-1.5 mm long; pedicels 2.5-4 mm long; ovary 1 mm long; **sepals** membranous, glabrous, pale yellow-green, usually with red veins, the dorsal sepal ovate, acute, 4-7 mm long, 1.75-2.75 mm wide, 3-veined, the lateral sepals connate into an ovate, shortly bifid synsepal, 4-7 mm long, 2.5-3 mm wide, 4-veined, the tips acute, in apposition; **petals** translucent light yellow, elliptical-obovate, acute, 1.5-2 mm long, 0.5-0.75 mm wide, with the midvein red; **lip** yellow-green to red, oblong, rounded at the apex, 1.75-3 mm long, 0.75-1 mm wide, the disc shallowly channeled, the base truncate, with a small, central, marginal cavity, hinged to the column-foot; **column** winged above the middle, dentate at the apex, 1.5-2 mm long, the foot 1 mm long with a pair of rounded calli near the middle, the anther and stigma ventral.

MEXICO: **Oaxaca**: alt. 3,000 ft., 1840, *H. Galeotti 5175* (Holotype of *P. microphylla*: W).
BELIZE: 1905-07, *M.E. Peck 498* (K). Orange Walk, northern highway, north of Maskall, 25 Jan. 1974, *J.D. Dwyer & R. Liesner 12188* (MO). **Cayo**: Mile 28 Western Highway, alt. 30 m, 10 May 1997, *G. Davidse Y D.L. Holland 36321* (MO); Southern Maya Mountains, Bladen Nature Reserve, 13 May 1997, *G. Davidse 36367* (MO).
HONDURAS: sine loc., collected by Matthews, cult. 1974, *C. Luer 1001* (SEL).
NICARAGUA: *Jinotega*: between Pantasmi and Cua rivers, alt. 2,000 ft., *A.H. Heller 1811* (AMES). **Zelaya**: near Siuma, *A.H. Heller 4649* (SEL).
COSTA RICA: sine loc., ca. 1867, *A. Endres 23, 23A* (W); *A. Endres 677* (W). **Heredia**: along Río Puerto Viejo, north of Las Horquetas, alt. 60 m, 19 July 1984, *M.H. Grayum 3564* (MO); Parqué Nac. Braulio Carrillo, Est. Magsaysay, alt. 1100 m, 2 June 1990, *G. Carballo 110* (CR, K, MO).
PANAMA: **Colon** Río Indis au Fotó, near sea level, 24 Aug. 1911, *H. Pittier 4264* (holotype of *P. panamensis* presumably destroyed at B; lectotype here designated: AMES 22755, illustr. of type). **Panama**: El Llano-Carti road, Río Terable Valley, alt. 300-400 m, 9 June 1982, *S. Knapp & R. Schmalzel 5480* (MO).
JAMAICA: sine loc., received in 1880, flowered at K, 14 Aug. 1886, *D. Morris s.n.* (holotype of *P. rotundifolia*: K), C. Luer illustr. 18799; flowered at K, June 1895, *D. Morris s.n.* (K).
ECUADOR: **Pastaza**: collected near Puyo, cultivated at Chamblee, GA, 17 June 1975, *F L Stevenson 61775-4* (SEL).

This little species is widely distributed at relatively low altitudes through Central America and northern South America into Ecuador. It is little more than a vegetative variation of the frequent and even more widely distributed *Specklinia grobyi-picta*-complex. *Specklinia microphylla* is characterized by a repent rhizome bearing abbreviated ramicauls with small, broadly elliptical, more or less overlapping, suberect leaves. The lax, few-flowered raceme reaches well-above the leaves. Although small, the flowers are basically similar to those of *S. grobyi* (Bateman ex Lindl.) F.Barros, including the pair of calli on the column-foot.

Specklinia minuta (Ames & C.Schweinf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Bas.: *Pleurothallis minuta* Ames & C.Schweinf., Sched. Orch. 10: 30, 1930.
Ety.: From the Latin *minutus*, "minute," referring to the very small habit,

Plant very small, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 2-3 mm long, enclosed by 2 ribbed, tubular sheaths. **Leaf** erect, coriaceous, elliptical to obovate, obtuse, 8-12 mm long, 2.5-3.5 mm wide, cuneate below into an ill-defined petiole 1-2 mm long. **Inflorescence** a lax, simultaneously 3- to 5-flowered raceme, 15-17 mm long, including the slender peduncle 10-12 mm long, emerging laterally from the ramicaul; floral bracts 0.75 mm long; pedicels 1 mm long; ovary 0.3 mm long; **sepals** red, glabrous, carinate, the dorsal sepal ovate-triangular, acute, concave, 2.8 mm long, 1.2 mm wide, 3-veined, the lateral sepals free, ovate-triangular, acute, 2.8 mm long, 1 mm wide; **petals** translucent red, elliptical-obovate, narrowly obtuse, microscopically erose, 1.5 mm long, 0.5 mm wide; **lip** red, thick, oblong, 1.25 mm long, 0.6 mm wide, broadly rounded at the apex, the disc cellular-glandular, shallowly channeled between a pair of low, longitudinal calli, the base truncate, slightly decurved, hinged to the column-foot; **column** semiterete with broad, marginal wings, bidentate at the apex, 1.5 mm long, the foot 0.75 mm long, with the anther shortly hooded and the stigma ventral.

COSTA RICA: **Alajuela**: La Palma, alt. 1100 m, 25 Oct. 1922, *A.M. Brenes (13)343* (Holotype: AMES); Rincón de la Vieja, Quebrada Rancho Grande, alt. not recorded, 12 Sept. 1978, *C. Todzia 430* (CR), C. Luer illustr. 17801.

This species, similar to *Specklinia lanceola* (Sw.) Garay, is found uncommonly in Costa Rica. It is distinguished from *S. lanceola* by the very small habit and much smaller, dark red flowers. Instead of two or three, comparatively large flowers, four or five, tiny red flowers are borne simultaneously in a loose raceme. Except for size, the floral parts are not remarkably different from those of *S. lanceola*.

Specklinia mitchellii (Dod) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Bas.: *Pleurothallis mitchellii* Dod, Moscosoa 3: 109, 1984.

Ety.: Named in honor of Dr. Clay Mitchell of the Agencia Internacional de Desarrollo.

Syn.: *Anathallis mitchellii* (Dod) Pridgeon & M.W.Chase, Lindleyana 16: 249, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-5 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, subacute to obtuse, petiolate, marginate, microscopically erose, 8-11 mm long including a petiole 2-3 mm long, 2-3.5 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, distichous, loose, successively few-flowered raceme, to 15 mm long including the slender peduncle ca. 5 mm long, from near the apex of the ramicaul; floral bracts oblique, acute, 0.75-1 mm long; pedicels 1-1.25 mm long; ovary 0.75 mm long; **sepals** yellow, membranous, subcarinate, cellular-glandular within, the dorsal sepal ovate, acute, 5.5 mm long, 2.25 mm wide, 3-veined, the lateral sepals connate into an ovate, shortly bifid with acute tips, shallowly concave lamina, 5.75 mm long, 3 mm wide, 2-veined; **petals** membranous, glabrous, narrowly elliptical, acute, 2.25 mm long, 0.75 mm wide, 1-veined, with the margins microscopically erose above the middle; **lip** oblong, obtuse at the apex, 2.5 mm long, 1 mm wide, the margins of the middle third erect and finely ciliate, the disc cellular-glandular, with a pair of low, longitudinal calli that unite into a thickened elevation above the base, the base subunguiculate, hinged to the tip of the column-foot; **column** winged above the middle, semiterete, 2 mm long, the anther and stigma ventral, the foot 1.5 mm long.

HAITI: Massif de la Hotte, Les Cayes, Formond, alt. 950 m, 18 Feb. 1982, flowered in cultivation 3 Mar. 1982, *D. Dod 892* (Holotype: JBSD; Isotypes: AMES, MO, NY, US); Formond, May 1982, *D. Dod 1-F* (SEL), C. Luer illustr. 8068.

This little species is uncommon in Haiti. It is very similar to *Specklinia curtisii* (Dod) Pridgeon & M.W.Chase with which it is sympatric. In habit they are similar, but the peduncles and the loose, successively flowered racemes are shorter. The sepals do not differ significantly. The petals are proportionately narrower and the erose margins are merely microscopic. The ciliated margins of the lip of *S. mitchellii* are limited to the middle third. The disc is occupied by a longitudinal pair of calli that unite above a shortly unguiculate base.

Specklinia morganii (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Bas.: *Pleurothallis morganii* Luer, Lindleyana 11: 171, 1996.

Ety.: Named in honor of Hilton ("Pete") Morgan, co-discoverer of this species.

Plant very small, epiphytic, repent, with the rhizome slender, 3-6 mm long between Ramicauls; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptic-obovate, subacute to obtuse, 6-10 mm long including the petiole 1-2 mm long, 3-3.5 mm wide, cuneate below into the petiole. **Inflorescence** an erect, lax, nearly simultaneously 4-flowered raceme 4-4.5 cm long including the peduncle ca. 1.5 cm long, from near the apex of the ramicaul; floral bracts 1-2 mm long; pedicels 2-3 mm long; ovary 0.5 mm long; **sepals** translucent greenish white, glabrous, the dorsal sepal narrowly ovate, acuminate, acute, 6.5 mm long, 1.8 mm wide, barely 3-veined, the lateral sepals free, narrowly ovate, oblique, acuminate, acute, 7 mm long, 1.6 mm wide, 1-veined; **petals** translucent, elliptical, obtuse, 2 mm long, 0.6 mm wide; **lip** greenish white, elliptical-oblong, 2 mm long, 0.8 mm wide, the apex rounded, the margins broadly rounded and slightly elevated below the middle, the disc with a pair of low, longitudinal calli, the base truncate, hinged to the column-foot; **column** longitudinally winged, tridentate at the apex, 1.75 mm long, the foot 1 mm long with a pair of rounded calli, the anther and stigma ventral.

ECUADOR: **Pichincha**: epiphytic in orange tree in a pasture, near Dos Ríos below Chiriboga, alt. 1400 m, collected by C.H. Dodson, H. Morgan et al., flowered in cultivation 18 Dec. 1979, *C. Luer 4834* (Holotype: SEL). **Imbabura**: Los Cedros reserve, along ridge in wet forest, alt. 1400 m, 23 Jan. 1993, *S. Dalström, T. Höijer & H. Wanntorp 1735* (MO), C. Luer illustr. 20944.

Forming mats of little leaves from creeping rhizomes, this species is similar to the Central American *Specklinia calyptrostele* (Schltr.) Pridgeon & M.W.Chase. It is distinguished from the latter by taller inflorescences with more flowers and acuminate sepals twice as long. Although the petals, lip and shaft of the column are similar, the column-foot of *S. morganii* has a distinct pair of rounded calli, similar to those seen in the *S. grobyi-picta* complex and relatives.

Specklinia mornicola (Mansf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Ety.: From the Latin *-icola*, "dwelling upon," referring to Morne Perroy.

Bas.: *Pleurothallis mornicola* Mansf., Arkiv. Bot. Stockh. 22A(8): 13, 1929.

Plant very small, epiphytic, caespitose, forming dense tufts; roots fleshy, broader than the ramicauls. Ramicauls slender, 2-4 mm long, enclosed by 2 loose, tubular sheaths. **Leaves** overlapping, coriaceous, obovate, obtuse, 6-8 mm long, 2-2.5 mm wide, narrowed below into a petiole ca. 1 mm long. **Inflorescence** a single, purple flower; peduncle slender, 3-4 mm long, from a node near the middle of the ramicaul; floral bract inflated, 2 mm long; pedicel 3 mm long; ovary 0.5 mm long; **sepals** glabrous, subcarinate, the dorsal sepal ovate-triangular, acute, concave, 3 mm long, 1.5 mm wide, 3-veined, the lateral sepals connate into an ovate-triangular synsepal, 3 mm long, 1.5 mm wide, the apex acute, minutely bifid; **petals** translucent, narrowly elliptical-obovate, acute, 1.5 mm long, 0.4 mm wide, without visible vein; **lip** thick, oblong, 2.5 mm long, 0.9 mm wide, fimbriate and rounded at the apex, the disc channeled between a pair of longitudinal calli along the basal two-thirds the length, the base subtruncate, hinged to the column-foot; **column** semiterete with marginal wings, denticulate at the apex, 1.6 mm long, the foot 1 mm long, with the anther hooded and the stigma ventral.

HAITI: Massif du Nord, near Ennery, top of Morne Perroy, alt. 1075 m, 13 June 1927, *E.L. Ekman H-8440* (Holotype: S; Isotypes: AMES, K, NY), C. Luer illustr. 18585.

This minute species is apparently endemic at the summit of at least one of the mountains of Haiti where it is known only from the original collection. It is characterized by little tufts of overlapping leaves and a single, purple flower borne about midway along a leaf. In Mansfeld's description the inflorescence was noted to be one- or two-flowered, but there is no evidence of a second flower on several plants of the isotype at Kew. The dorsal sepal and synsepal are similar and acute. The petals are narrow and sharply acute (not *ligulata, obtusiuscula*). The lip is oblong, not spathulate. However, Mansfeld might have had the advantage of examining fresh flowers. The above description was made from a rehydrated flower.

Specklinia mornicola is very similar to *S. stillsonii* (Dod) Pridgeon & M.W. Chase that occurs in the same mountains of Haiti. It differs from the latter in narrower, non-denticulate leaves, and longer ramicauls and peduncles.

Specklinia mucronata (Lindl. ex Griseb.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Bas.: *Pleurothallis mucronata* Lindl. ex Griseb., Mem. Amer. Acad. Arts ser. 2, 8: 219, 1861, emend. Cogn. 1910.

Ety.: From the Latin *mucronatus*, "mucronate," referring to the apex of the leaves.

Plant minute, epiphytic, caespitose; roots comparatively thick. Ramicauls erect, 1-1.5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, margined and cellular-denticulate, obtuse to rounded, minutely apiculate, 4-5 mm long, 2.5-3 mm wide, the base cuneate into a petiole 0.5 mm long. **Inflorescence** a single flower to a loose, successively 3-flowered raceme, borne by an erect, capillary, peduncle 12-25 mm long, borne laterally from the ramicaul; floral bracts 1 mm long; pedicels 3-4 mm long; ovary 0.75 mm long; **sepals** appear to have been light yellow, subcarinate, glabrous, the

dorsal sepal elliptical, slightly acuminate, acute, 4.5 mm long, 1.75 mm wide, 3-veined, the lateral sepals free, ovate-triangular, oblique, slightly acuminate, acute, 4.25 mm long, 1.25 mm wide; **petals** translucent, obovate, subacute, 2.5 mm long, 1.25 mm wide, with the margins microscopically serrate; **lip** deeply trilobed, 2.6 mm long, 1.5 mm wide across the lobes expanded, oblong above the middle with the apex rounded, the lateral lobes below the middle, erect, antrorse, sharply acute with the margins minutely serrate, the disc longitudinally shallowly channeled, the base narrow, truncate, united to the column-foot; **column** slender, 1.25 mm long, narrowly long-toothed at the tip, the anther, rostellum and stigma ventral, the foot 0.5 mm long.

CUBA: Oriente: near Monte Verde, Jan.-July 1859, *C. Wright 1504* (Holotype: W, Isotypes: AMES, BR, K, MO, W), C. Luer illustr. 19014.

This species occurs locally in the mountains of the Oriente of Cuba. It is distinguished by the very small habit with broadly elliptical, obtuse leaves with minutely denticulte edges, and an elongated, lax, successively few-flowered raceme. The sepals are slightly acuminate. The petals are obovate and subacute. The lip is shallowly channeled medially and deeply lobed below the middle, the lobes being proportionately large, uncinate, and antrorse.

Specklinia napintzae (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Bas.: *Pleurothallis napintzae* Luer & Hirtz, Lindleyana 11: 173, 1996.

Ety.: Named for the community of Napintza in the Cordillera del Condor in southeastern Ecuador where this species was discovered.

Plant small, epiphytic, long-repent, the rhizome slender, 5-10 mm long between ramicauls; roots slender along the rhizome. Ramicauls suberect, 3-4 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 12-20 mm long, 4-5 mm wide, narrowed below into the subpetiolate base. **Inflorescence** a loose, successively few-flowered raceme, up to 30 mm or more long including the peduncle ca. 10 mm long, borne laterally from the ramicaul; floral bracts glabrous, 1.5 mm long; pedicel 3-3.5 mm long; ovary 1.5 mm long; **sepals** light yellow, glabrous, the dorsal sepal oblong-ovate, acute, thickened toward the apex, 5 mm long, 1.75 mm wide, the lateral sepals ovate, oblique, acute, 4.5 mm long, 1.5 mm wide, barely connate at the base; **petals** red, obovate, acute, acuminate, 3 mm long, 1.2 mm wide; **lip** red, glabrous, ovate, 3 mm long, 1 mm wide, the apex acute, the margins broadly rounded and erect below the middle, the disc with a pair of low, parallel carinae in the middle third, the base hinged to the column-foot; **column** semiterete, denticulate at the apex, 2 mm long, the foot 1 mm long, the anther, rostellum and stigma ventral.

ECUADOR: **Zamora-Chinchipe**: Cordillera del Condor, epiphytic in forest near Napintza, alt. 1000 m, June 1991, *A. Hirtz 5547* (Holotype: MO), C. Luer illustr. 15322.

This species is similar to the widely distributed *Specklinia spiculifera* (Lindl.) Pridgeon & M.W.Chase, but it is apparently confined to the Cordillera del Condor in eastern Ecuador. *Specklinia napintzae* is distinguished from the latter by broader leaves, longer pedicels, a raceme of slightly larger flowers, acuminate petals, and a pointed lip with erect margins below the middle.

Specklinia obliquipetala (Acuña & C.Schweinf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Bas.: *Pleurothallis obliquipetala* Acuña & C.Schweinf., Bot. Mus. Leafl. 6: 1, 1938.

Ety.: From the Latin *obliquipetalus*, "with oblique petals," referring to the petals.

Plant minute, epiphytic, caespitose; roots comparatively thick. Ramicauls erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 5-24 mm long, 2-3 mm wide, the base cuneate into a petiole 2-10 mm long. **Inflorescence** a single flower followed by a second in a short raceme, borne by an erect, capillary, peduncle 2-3 mm long, borne laterally from the ramicaul; floral bracts 1-1.5 mm long; pedicels 2-2.5 mm long; ovary 1 mm long; **sepals** subcarinate, glabrous, the dorsal sepal ovate-triangular, acute, 3-5 mm long, 1.5 mm wide, 3-veined, the lateral sepals connate below the middle, oblong, oblique, slightly acuminate at the acute apex, 3-5 mm long, each 1 mm wide; **petals** obovate, acute, 1.6-2.6 mm long, 0.5-1 mm wide, with the labellar margin dilated above the middle; **lip** oblong-subpanduriform, entire, 2.3-3.5 mm long, 1-2 mm wide, the apex broadly rounded,the disc shallowly channeled between a low pair of longitudinal calli on the middle third, the base truncate, connate to the column-foot; **column** slender, winged, 2 mm long, the anther, rostellum and stigma ventral.

CUBA: **Oriente**: Estribo del Este, Pico Turquino, 1 Aug. 1935, *J. Aquiño 9540* (Holotype: SV [HAC]; Isotype: AMES); Gran Piedra, alt. 1500 m, 4 Mar. 1911, *J.A. Schafer 9048* (AMES, NY), C. Luer illustr. 19029; Pico Turquino, 10 June 1936, *J. Acuña 10567* (HAC).

This species occurs locally in the mountains of the Oriente of Cuba. It is distinguished by the small habit with acute leaves and a short peduncle that bears one flower, often followed by a second. The sepals are acute and slightly acuminate at the tips. The petals are also acute, but distinctly dilated above the middle of the labellar margin. The lip is simply oblong or slightly panduriform.

Specklinia ordinata Luer & Dodson, sp. nov.

Ety.: From the Latin *ordinatus*, "in an orderly line," referring to the habit.

Species haec *Speckliniae spiculiferae* (Lindl.) Pridgeon & M.W.Chase similis, sed habitu duplo majore, sepalis obtusis proportione latioribus, et labello infra medium dilatato differt.

Plant small, epiphytic, long-repent, the rhizome slender, 1-2 cm long between ramicauls; roots slender along the rhizome. Ramicauls erect, 5-8 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, 3.5-4.5 mm long, 3-4.5 mm wide, gradually narrowed below into a petiole ca. 0.5 cm long. **Inflorescence** a loose, successively 4- to 7-flowered raceme, 5-7.5 cm long including the peduncle 2.5-3 cm long, borne laterally from the ramicaul; floral bracts glabrous, 2 mm long; pedicel 1.5 mm long; ovary 1.5 mm long; **sepals** light rose, glabrous, the dorsal sepal oblong, obtuse, 3 mm long, 1.4 mm wide, 3-veined, the lateral sepals oblong, slightly oblique, obtuse, 3 mm long, 1.4 mm wide, 2-veined, barely connate at the base; **petals** narrowly elliptical, acute, 3.25 mm long, 0.75 mm wide, 1-veined; **lip** red, glabrous, ovate-oblong, subtrilobed, with the apex obtuse, 2.75 mm long, 1.6 mm wide across the sides expanded, the sides erect, broadly rounded, below the middle, the disc shallowly channeled between a pair of longitudinal calli below the middle, the base truncate, hinged to the column-foot; **column** semiterete, winged above the middle, dentate at the apex, 1.5 mm long, the foot 1 mm long, the anther, rostellum and stigma ventral.

ECUADOR: **Sucumbíos**: Imuya Cocha, near the Colombian border, alt. 200 m, 30 July 1991, *C.H. Dodson et al. 18863* (Holotype: MO), C. Luer illustr. 15541.

This species is related to the widely distributed *Specklinia spiculifera* (Lindl.) Pridgeon & M.W.Chase, but differs from it by twice longer leaves, ramicauls, and rhizome. Although the raceme is longer with more flowers, the flowers are slightly smaller with obtuse, proportionately wider sepals. In common with *S. spiculifera*, the narrow petals are slightly longer than the petals, and the lip is concave below the middle with erect, broadly rounded sides.

Specklinia pectinifera Luer & Hirtz, sp. nov.

Ety.: From the Latin *pectinifera*, "comb bearing," in reference to congested, distichous raceme.

Species haec *Speckliniae altae* (Luer) Luer affinis, sed racemo abbreviato disticho congestissimo quam folio subsessile breviore differt.

Plant small, epiphytic, shortly ascending-repent; roots slender. Ramicauls stout, erect, 1-1.5 cm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, thinly coriaceous, rigid, narrowly obovate, obtuse, 6-8 cm long including, 1.2-1.8 cm wide, narrowly below into the indistinctly petiolate base. **Inflorescence** an erect, congested, distichous, simultaneously many-flowered raceme up to 2.5 cm long or longer, borne by a compressed peduncle ca. 4 cm long, from below the apex of the ramicaul; floral bracts 1-1.5 mm long; pedicels 1-1.5 mm long; ovary 1-1.5 mm long; flowers non-resupinate, borne 1-1.5 mm apart; **sepals** glabrous, fleshy thickened at the apex, carinate, light green suffused with tan externally, thickly callous at the apices, the dorsal sepal ovate, acute, 5 mm long, 2.5 mm wide, 3-veined, the lateral sepals connate into an ovate, acute, bifid synsepal, 5 mm long, 3.5 mm wide, 4-veined, free 2 mm; **petals** translucent light green, oblong, oblique, obtuse, 2 mm long, 0.4 mm wide, the margins of the apex minutely irregular-erose; **lip** green, oblong, 2.3 mm long, 1.4 mm wide, the apex rounded, the margins elevated below the middle, the disc with a pair of parallel, longitudinal calli, and a central callus between toward the apex, the base truncate, hinged to the column-foot; **column** longitudinally winged, with broad, uncinate lobes at the apex, 2.5 mm long, the foot 1 mm long with a pair of low, marginal calli, the anther and stigma ventral.

ECUADOR: **Pichincha**: epiphytic in wet forest near Mindo, alt. 1800 m, cultivated in Quito, flowered in cultivation 1 Sept. 2004, *A. Hirtz 8989* (Holotype: MO), C. Luer illustr. 20974.

This species is characterized by a compressed peduncle that bears a short, congested, distichous raceme of non-resupinate flowers in opposite-facing rows. It is related to the tall, loosely flowered *Specklinia alta* (Luer) Luer, but distinguished by the shorter, subsessile leaves in addition to the abbreviated raceme. The sepals are similar with the apices fleshy thickened; the petals are similar but narrower; and the longitudinally callous lips are also similar.

Specklinia picta (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.
Bas.: *Pleurothallis picta* Lindl., Bot. Reg. 21: sub. t. 1797, #15, 1835.
Ety.: From the Latin *pictus*, "painted," referring to the striped sepals.
Syn.: *Pleurothallis marginata* Lindl., Bot. Reg. 24: Misc. 70, 1838.
Syn.: *Pleurothallis marginata* Lindl., Bot. Reg. 34: Misc. 42, 1848, not 1838.
Ety.: From the Latin *marginatus*, "marginate," referring to the leaves.

Syn.: *Pleurothallis surinamensis* H. Focke, Tijdschr. Wis-Natuurk. Wetensch. 2: 194, 1849.
Ety.: Named for Suriname, country where the collection was made.

Syn.: *Pleurothallis florulenta* Linden & Rchb.f., Bonplandia 3: 223, 1885.
Ety.: From the Latin *florulentus*, "abundantly flowered," referring to the inflorescence.

Syn.: *Humboldtia marginata* (Lindl.) Kuntze, Rev. Gen. Pl. 668, 1891.

Syn.: *Humboldtia picta* (Lindl.) Kuntze, Rev. Gen. Pl. 668, 1891.

Syn.: *Lepanthes plurifolia* Barb.Rodr., Vellosia 1 (ed. 2): 118, 1891.
Ety.: From the Latin *plurifolius*, "several-leaved," apparently intended to be *pluriflorus*.

Syn.: *Pleurothallis densifolia* Rolfe ex Britton, Mem. Torrey Bot. Club 4: 260, 1895.
Ety.: From the Latin *densifolius*, "densely leaved, caespitose," referring to the habit.

Syn.: *Lepanthes pluriflora* Barb.Rodr., Fl. Bras. 3(4): 492, 1896. *nom. nud.*
Syn.: *Pleurothallis pluriflora* (Barb.Rodr.) Cogn., Fl. Bras. 3(4): 492, 1896.
Ety.: From the Latin *pluriflorus*, "several-flowered," referring to the raceme.

Syn.: *Pleurothallis panamensis* Schltr., Repert. Spec. Nov. Regni Veg. 17: 140, 1921.
Ety.: Named for Panama, country of origin.

Syn.: *Pleurothallis dryadum* Schltr., Repert. Spec. Nov. Regni Veg. 19: 186, 1923, not 1922.
Ety.: Named for a dryad, a mythological, tree-dwelling nymph.

Syn.: *Pleurothallis lindleyana* Cogn., Fl. Bras. 3(4): 489, 1896, replaced name for *P. marginata* Lindl., 1848.
Ety.: Named for Dr. John Lindley, author of *P. marginata*.

Syn.: *Pleurothallis integrilabia* Ames, Hubbard & C.Schweinf., Bot. Mus. Leafl. 3: 39, 1934, replaced name for *P. dryadum* Schltr., 1923.

Syn.: *Pleurothallis arevaloi* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 27: 43, 1924.
Ety.: Named for a person named Arevalo, with no clue to his identification.

Syn.: *Specklinia florulenta* (Linden & Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.
Syn.: *Specklinia marginata* (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001 [*Pleurothallis marginata* Lindl., Bot. Reg. 34: Misc. 42, 1848, not 1838].

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-10 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, coriaceous, sometimes suffused with purple, narrowly elliptical to narrowly obovate, subacute to obtuse, petiolate, 2-5 cm long including a petiole 0.5-2 cm long, 0.5-1.5 cm wide, the base narrowly cuneate into the petiole. **Inflorescence** a lax, distichous, more or less flexuous, usually simultaneously few- to many-flowered raceme 5-15 cm long, borne by a suberect, slender peduncle 3-10 cm long, from a node on the ramicaul; floral bracts oblique, acute, 1-2 mm long; pedicels 3-5 mm long; ovary 1-3 mm long; **sepals** pale yellow, usually with a thin, purple stripe, membranous, glabrous, carinate, the dorsal sepal ovate, narrowly acute, 5-10 mm long, 2-3 mm wide, 3-veined, the lateral sepals connate to near the apex into an ovate, narrowly acute, shallowly concave synsepal, 5-10 mm long, 2-3.5 mm wide, 2-veined, forming a shallow mentum below the column-foot; **petals** membranous, translucent, glabrous, elliptical, oblique, acute, 1.5-2 mm long, 0.5-1 mm wide, 1-veined; **lip** oblong, rounded at the apex, 2-2.5 mm long, 1 mm wide, shallowly concave centrally between a pair of low, longitudinal calli, the base subtruncate, hinged to the tip of the column-foot; **column** broadly winged above the middle, 2 mm long, bidentate at the apex, the anther and stigma ventral, the foot 1 mm long with a pair of tuberosities or calli near the middle.

The following are only representative collections selected from hundreds:
GUYANA: Demerara, cultivated ca. 1835 by *Loddiges s.n.* (Holotype: K); Demerara, 1837, *Schomburk 87.5* (K); 1898, *E.F. im Thurn 144* (K); Potaro River below the Kaieteur, Sept.-Oct. 1881, *G.S. Jenman 823* (K); Cuyuni River, Oct. 1904, *A.W. Bartlett 8100* (K); Essequibi River, Moraballi Creek, alt. near sea level, 20 Sept. 1929, *N.Y. Sandwith 319* (K); basin of Shodikar Creek, Essequibo tributary, 8-22 Jan. 1938, *A.C. Smith 2889* (K, NY).
SURINAME: 1825, *Dr. Hostmann 279* (K, W); sine loc., *Wullschlegel 537* (BR); sine loc., *H. Focke s.n.* (holotype of *P. surinamensis*: W); Confluent Litany - Koule-Koule, Monts Tumuc-Humac, alt. 160 m, 28 July 1993, *J.J. de Granville 11872* (CAY, US).
BRAZIL: **Amazonia**: Rio Yauapery, tributary of Rio Negro, *B. Rodrigues s.n.* (holotype of *P. pluriflora* is Rodrigues's illustration); Terr. Roraima, vicinity of Auaris, alt. 760-800 m, 12 Feb. 1969, *G.T. Prance, J.R. Steward, J.F. Ramos & L.G. Farias 9846* (INPA, K, NY, US); Região do Rio Jarí, between Pilão and Repertimento Mata de terra firme, 20 Jan. 1969, *N.T. Silva 1659* (K, NY). SP: Comm. Geogr. & Geol. rec. Löfgren 1609, (BR).
BOLIVIA: **La Paz**: "Yungas," 1890, *M. Bang 216* (AMES, M, NY, US, W). **Cochabamba**: Chapare, near Villa Tunari, alt, 300 m, 16 Jan. 1988, *C. Luer, J. Luer, R. Vásquez et al, 12845* (MO). **Santa Cruz**: collected near Santa Cruz, alt. 600 m, cultivated by Luis Moreno, 3 Feb. 1988, *C. Luer & R. Vásquez 12982* (MO).
PERU: **Huánuco**: Leoncio Prado, near Tingo Maria, alt. 800 m, 20 Oct. 1990, collected by E. Jara, *D. Bennett 4743* (MO); Cuevas de Las Lechuzas, collected by E. Jara, 20 Dec. 1990, *D. Bennett 4939* (MO).
ECUADOR: **Esmeraldas**: new road between Lita and San Lorenzo, alt. 300 m, 12 Jan. 1992, *C. Luer & J. Luer, A. & X. Hirtz et al. 15573* (MO). San Lorenzo, alt. 100 m, flowered in cultivation at Ecuagenera, 11 Jan. 2004, *A. Hirtz 8671* (MO), C. Luer illustr. 20963. **Napo**; Bermejo oil fields, north of Lumbaqui, alt. 850 m, 9 Feb. 1986, *C. Luer, J. Luer, A. Hirtz & A. Embree 11742* (MO). **Pastaza**: southeast of Puyo, alt. 1000 m, 21 Feb. 1990, *S. Dalström & L. Årnby 1396* (MO). **Azuay**: Cordillera del Molleturo, above Río Shurimal, alt. 650 m, 27 Jan. 1992, *C. & J. Luer, P. & A. Jesup & A. Hirtz 16190* (MO). **Loja**: El Cucho, west Andes above Santa Rosa, alt. 300-600 m, *F.C. Lehmann 8362* (K). **Zamora-Chinchipe**: south of Yangana, alt. 2000 m, 18 Mar. 1984, *C. Luer, S. Dalström et al. 9612* (MO); Cordillera del Condor, east of Los Encuentros, alt. 1500 m, 19 May 1988, *C. Luer, A. Hirtz et al. 13481* (MO).
COLOMBIA: sine loc., *J. Linden 55* (holotype of *P. florulenta*: W; isotype: AMES). **Antioquia**: Agua Clara near Palmira, alt. 5,000 ft., Nov. 1877, *F.C. Lehmann 130* (W). **Cauca**: Rio Buga, 1500 m, 28 July 1881, *F.C. Lehmann 812* (W). **Caqueta**: near Mocoa, alt. 530 m, Oct. 1921, *W. Hopp 121, 161* (holotype of *P. arevaloi* lost at B).
PANAMA: received from Chipman, cultivated by *Vietch 149* (W). **Chiriquí** (and Veraguas): Apr. 1858, *Moritz Wagner 24* (holotype of *P. panamensis* destroyed at B). **Canal Zone**: Gamboa, alt. 20-100 m, Nov. 1911, *H. Pittier 4787* (AMES).
COSTA RICA: **Alajuela**: San Pedro de San Ramón, alt. 900 m, June 1921, *A.M. Brenes 36* (holotype of *P. dryadum* presumably destroyed at B; lectotype: AMES, illustr. of type; isolectotype: CR).
GUATEMALA: sine loc., *U. Skinner s.n.* (holotype of *P. marginata*: K).

This species is the partner of the *Specklinia grobyi-picta* complex. See the discussion of *S. grobyi* (Bateman ex Lindl.) F.Barros. *Specklinia grobyi* and *S. picta* (Lindl.) Pridgeon & M.W.Chase are so similar to each other, that an identification often relies on personal judgement. *Specklinia picta* is distinguished from the usual *P. grobyi* and the multitude of intermediates by usually purple-striped sepals, and a narrowly acute to acuminate synsepal. These features are often not obvious, causing inaccuracy in many identifications.

Specklinia pisinna (Luer) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6, XI, 2003.
Bas.: *Pleurothallis pisinna* Luer, Lindleyana 6: 105, 1991.
Ety: From the Latin *pisinnus*, "very small," referring to the flowers and habit.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-2.5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, obovate, 10-11 mm long, 4-4.5 mm wide, the apex obtuse to rounded, cuneate below into a petiole 1 mm long. **Inflorescence** a loose, successively 2- to 3-flowered raceme borne by a slender, erect peduncle 8-9 mm long, emerging laterally from the ramicaul; floral bract 1 mm long; pedicel 1.5 mm long; ovary 0.75 mm long; **sepals** yellow with purple stripes, glabrous, with the dorsal sepal ovate, 3 mm long, 1.75 mm wide, 3-veined, the apex subacute, thickened, with the lateral sepals completely connate into an ovate, obtuse lamina 3.25 mm long, 2.75 mm wide; **petals** translucent brown, elliptical, obtuse, 2 mm long, 0.75 mm wide; **lip** dark purple-brown, thick, elliptical-oblong, 2.25 mm long, 1.1 mm wide, with the apex rounded, shallowly sulcate centrally between a low pair of longitudinal calli, with the subtruncate base hinged to the column-foot; **column** longitudinally winged in the distal three fourths, bidentate at the apex, 1 mm long, the foot 1.5 mm long, with slight marginal elevations, with the anther and stigma ventral.

GUATEMALA: **Alta Verapaz**: alt. 300 m, collected and cultivated by H. Ibañez in Cobán, 27 Nov. 1990, *C. Luer 14860* (Holotype: MO).
MEXICO: **Chiapas**: south of Palenque near Cascada Mizola, alt. 300 m, 15 Jan. 1982, *D.E. Breedlove 57322* (CAS); Ococingo, Lacanja-Chanzayab, road Palenque Boca Lacantum, alt. 340 m, 7 Nov. 1985, *E. Martínez S. 15057* (MEXU, MO). **Veracruz**: Zacuapam, Barranca de Aacuapam, alt. 900-1000 m, 17 May 1994, *L. Sánchez S., A.R. López-Ferrari, A. Espejo & J. García-Cruz 311* (AMO), C. Luer illustr. 19173. **Chiapas**: *Hoover 257* (MO), C. Luer illustr. 17016.
HONDURAS: **Yoro**: Río Texiquat, alt. 150 m, 11 Apr. 1995, *T. Hawkins & M. Merello 751* (MO).

This tiny species is obviously related to the widely distributed and variable *Specklinia grobyi-picta* complex. Numerous closely allied and look-alike taxa are already lumped together in this complex, because there is at present no satisfactory way to determine the boundaries of the included taxa. *Specklinia pisinna* is distinguished from them by the tiny flower produced successively in a two- to three-flowered raceme at the apex of a peduncle shorter than the leaves. The flower is basically very similar to a minute variation of *S. grobyi* (Bateman ex Lindl.) Luer except that the pair of lobules seen on the column-foot of *S. grobyi* are absent.

Specklinia producta (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Bas.: *Pleurothallis producta* Luer, Selbyana 3: 176, 1976.
Ety.: From the Latin *productus*, "elongated," referring to the inflorescence.

Plant medium in size, often terrestrial, caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 2-5 cm long including an indistinct petiole ca. 1 cm long, 5-6 mm wide, gradually narrowed below into the base. **Inflorescence** an erect, more or less secund, distantly and successively several-flowered raceme, up to 24 cm long including the slender peduncle 10-15 cm long, borne laterally from the ramicaul; floral bracts acute, 2 mm long; pedicels 5-6 mm long; ovary 2 mm long, minutely subverrucose; **sepals** membranous, subcarinate, glabrous, light green, the dorsal sepal ovate, acute, 5.5 mm long, 2.5 mm wide, 3-veined, the lateral sepals connate nearly to the apex into an ovate, acute, shortly bifid synsepal, 5 mm long, 3.5 mm wide, 4-veined; **petals** translucent greenish white, obovate, obtuse, 2 mm long, 1 mm wide, 1-veined; **lip** green, marked with red on margins, oblong, rounded at the apex, 2 mm long, 1 mm wide, the disc shallowly channeled between a longitudinal pair of low calli on the lower two-thirds, the base truncate, hinged to the column-foot; **column** pale green, broadly winged above the middle, bidentate at the apex, 2 mm long, the foot 1 mm long with a pair of rounded calli near the middle, the anther and stigma ventral.

ECUADOR: **Pichincha**: new road between Quito and Santo Domingo, alt. ca. 2000 m, 1 Mar. 1975, *C. Luer & R. Kent 572* (Holotype: SEL); sine loc., cultivated by Janet Kuhn, 4 June 1975, *C. Luer 290-S* (paratype: SEL). **Tungurahua**: between Ambato and Baños, alt. ca. 2000 m, cultivated at Ecuagenera, Gualaceo, 5 Mar, 2001, *C. Luer 19742* (MO). **Azuay**: Sayausid, terrestrial, alt. 3000 m, 1 Apr. 1968, *G. Harling, G. Storm & B. Ström 7924* (AMES, GB); south of Cumbe, alt. 2900-3000 m, 9 June 1979, *B. Løjtnant, A. & U. Molau 14351* (AAU, GB); between Jarata and La Paz, between Cuenca and Loja, alt. 3400 m, 8 Mar. 1985, *G. Harling & L. Andersson 22818* (GB); terrestrial, south of Cuenca, alt. 2800 m, 20 Jan. 1992, *C. Luer, J. Luer, A. & P. Jesup 16053* (MO).

This species is closely allied to the *Specklinia grobyi-picta* complex, but differs with the markedly elongate, distantly flowered raceme with longer-pedicellate flowers. The flowers are practically inseparable from those of the complex with the simple sepals and petals; an oblong lip; a bituberous column-foot; and a column with similarly shaped wings that protrude at the apex.

Specklinia recula (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Bas.: *Pleurothallis recula* Luer, Lindleyana 11: 92, 1996.
Ety.: From the Latin *recula*, "a little thing," referring to the habit of the plant.

Plant very small, epiphytic, densely caespitose; roots slender but thicker than the ramicauls. Ramicauls slender, erect, 1-2.5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical-obovate, subacute, 5-18 mm long including the petiole 1-3 mm long, 3-4 mm wide, the base narrowed into the petiole. **Inflorescence** a fascicle of successive, single-flowered pedicels, borne by a filiform peduncle 15-20 mm long, borne laterally from the ramicaul; floral bracts imbricating, 1-1.5 mm long; pedicel 3-5 mm long; ovary, 0.5-1 mm long; **sepals** transparent light yellow, thin, glabrous, the

dorsal sepal elliptical-ovate, obtuse, 3.75-6 mm long, 2-3 mm wide, 3-veined, the lateral sepals ovate, oblique, obtuse, 3.5-6 mm long, connate from the middle or to near the apex into a lamina 2.5-3 mm wide; **petals** translucent light yellow, thin, obovate, oblique, obtuse, 2 mm long, 1 mm wide, 1-veined; **lip** yellow-orange to yellow-green, elliptical-oblong, arcuate, 1.75-2 mm long, 0.75-1 mm wide, the margins microscopically erose toward the rounded apex, the disc with a pair of longitudinal calli near the middle, the base subtruncate, delicately hinged to the column-foot; **column** deeply winged above the middle, 1.5 mm long, the anther subapical, the stigma ventral, the foot 1 mm long with a pair of minute lobules near the middle.

ECUADOR: **Napo**; Río Jatunyacu, above Shandia, alt. 650 m, 12 Mar. 1991, *A. Hirtz & S. Ortega 5364* (Holotype: MO), C. Luer illustr. 15324; epiphytic in forest near Tena, alt. ca. 1000 m. July 1975, *C. Luer, G. Luer & S. Wilhelm 455* (SEL). **Esmeraldas**: El Tigre, Río Cayapas, alt. 400 m, 14 Nov. 1995, *C. Porter s.n.* (MO).
PANAMA: **Panama**: El Llano-Carti road, 13 Apr. 1975, *S. Mori & J. Kallunki 5561* (MO); Altos de Pacora road, alt. ca. 600 m, 4 Mar. 1976, *C. Luer, J. Luer, R. L. Dressler & P. Taylor 742* (SEL).
COSTA RICA: **Puntarenas**: Osa Peninsula, west of Rincon de Osa, alt. 30 m, 4 June 1968, *W. Burger & R. Stolze 5432* (CR, F).

This tiny species is similar to a small *Specklinia grobyi* (Bateman ex Lindl.) F.Barros, but *S. recula* is distinguished by a fasciculate inflorescence instead of a loose raceme, and by the elongated wings of the column. The flower of the Cuban and Hispaniolan *S. schaferi* (Ames) Luer is also similar, but the inflorescence of the latter is elongate and loosely flowered. A minute pair of calli is found on the column-foot, but smaller than those of several other species, most notable the *S. grobyi-picta* complex.

Specklinia schaferi (Ames) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Bas.: *Pleurothallis schaferi* Ames, Orchidaceae 7: 119, 1922.
Ety.: Named for J.A. Schafer who collected the species.

Syn.: *Pleurothallis bipapularis* Dod, Moscosoa 1: 52, 1976, as *bipapulare*.
Ety.: From the Latin *bipapularis*, "bipapular," referring to the pair of calli on the column-foot.

Syn.: *Pleurothallis haitiensis* Dod, Moscosoa 3: 113, 1984.
Ety.: Named for Haiti, the country of origin.

Syn.: *Specklinia bipapularis* (Dod) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Syn.: *Specklinia haitiensis* (Dod) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3.5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical-obovate, subacute to obtuse, petiolate, 5-10 mm long including a petiole ca. 1 mm long, 2-3 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, distichous, loose, nearly simultaneously few-flowered raceme, to 8-17 mm long including the slender peduncle 6-8 mm long, borne from near the apex of the ramicaul; floral bracts oblique, acute, 0.75-1 mm long; pedicels 1-2 mm long; ovary 0.5 mm long; **sepals** light yellow, glabrous, subcarinate, the dorsal sepal oblong-ovate, obtuse, 2-4 mm long, 1-1.5 mm wide, 3-veined, the lateral sepals oblong, obtuse, 1.6-3.5 mm long, 0.6-1 mm wide, 1-veined, forming a mentum with the column-foot; **petals** membranous, glabrous, narrowly oblong-obovate, obtuse, 1.25-1.8 mm long, 0.3-0.5 mm wide, 1-veined; **lip** oblong, rounded at the apex, 1.5-1.8 mm long, 0.3-0.5 mm wide, the disc shallowly channeled, the base subtruncate, hinged to the tip of the column-foot; **column** winged above the middle, 1.2 mm long, the anther and stigma ventral, the foot 1 mm long with a pair of small, marginal calli.

CUBA: **Holguín** (old Oriente): Sierra Nipe, near Woodfred, alt. 450-550 m, 5 Jan. 1910, *J.A. Schafer 3441* (Holotype: AMES, NY), C. Luer illustr. 19035; Mayarí, Sierra de Nipe, Cayo Las Mujeres, alt. 750 m, 25 Nov. 1997, *C. Luer, J. Luer, M. Díaz, J. Llamacho, J. Ackerman & R. Dressler 18620* (HAJB, MO). **Guantanamo**: Sierra del Frijol, alt. 900 m, 12 May 1983, *Bisse et al. s.n.* (HAJB), C. Luer illustr. 18811.
HAITI: Massif de la Hotte, Les Cayes, Formond, alt. 950 m, 24 Feb. 1982, flowered in cultivation 28 July 1983, *D.D. Dod 890* (holotype of *P. haitiensis*: JBSD; isotypes: AMES, MO, NY, US), C. Luer illustr. 9189; Citadel, collected by D. Dod Oct. 1987, flowered in cult. 7 Apr. 1988, *C. Luer 13731* (MO).
DOMINICAN REPUBLIC: La Lechuza, Pilancón, Bayaguana, alt. 300 m, 27 Apr. 1973, *D. Dod 504* (holotype of *P. bipapularis*: SDM; isotypes: AMES, NY, SEL, US), C. Luer illustr. 19037; La Lechuza. alt. 300 m, 14 May 1973, *D. Dod 399* (SDM); 12 Jan. 1974, *D. Dod 505* (SDM); La Vereda, Pilancón, Bayaguana, alt. 300 m, 21 Feb. 1975, *D. Dod 506* (SDM); Hoyo de Pelempito, Sierra de Baoruco, alt. 800 m, 4 July 1971, flowered in cultivation 19 Oct. 1975, *D. Dod 507* (SDM); Sierra de Baoruco, Pedernales, Hoyo de Pelempito, alt. 700-1000 m, *A.H. Liogier 16716* (AMES, NY).

This species is not uncommon in eastern Cuba and on the island of Hispaniola. Differences in collecions from the two islands are minor in sizes and in more or less acute to obtuse tips of the sepals. *Specklinia schaferi* is also similar to the one- to two-flowered *S. lichinicola* (Griseb.) Pridgeon & M.W.Chase. Misidentifications of *S. schaferi* are probably responsible for some of the reports of *S. grobyi* (Bateman ex Lindl.) F.Barros in the Greater Antilles. Similar to *S. grobyi*, a pair of calli are present on the column-foot.

Specklinia schaferi is characterized by a tuft of little, narrowly elliptic-obovate leaves, and simultaneously three- to four-flowered racemes that are carried near the tips of the leaves. The sepals are narrowly obtuse with the laterals free; the petals are obovate, and the lip is simply oblong.

Specklinia segregatifolia (Ames & C.Schweinf.) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6: XI, 2003.

Bas.: *Pleurothallis segregatifolia* Ames & C.Schweinf., Sched. Orch. 8: 33, 1925.

Ety.: From the Latin *segregatifolius*, "with segregate leaves," alluding to some imagination about segregate leaves. No clue to the meaning is given in either the Latin or English description.

Syn.: *Pleurothallis calyptrosepala* L.O.Williams, Amer. Orchid Soc. Bull. 11: 65, 1940.

Ety.: From the Greek *calyptrosepalon*, "hooded sepal," referring to the cucullate tip of the dorsal sepal.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 4-8 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly to broadly elliptical-obovate, petiolate, subacute to obtuse, 6-25 mm long including the petiole 3-8 mm long, 4-5 mm wide, the base narrowed into the petiole. **Inflorescence** a lax, distichous, flexible, flexuous, successively several-flowered raceme, up to 8 cm long including the peduncle 3-4 cm long, borne laterally from the ramicaul; floral bracts oblique, 1 mm long; pedicel 1.5-3 mm long; ovary 1-1.25 mm long; **sepals** dark red-purple to pale rose, membranous, glabrous, the dorsal sepal oblong-ovate, 3-4.75 mm long, 1.5-2 mm wide, 3-veined, with the apex variably narrowed into an obtuse or cucullate tip, sometimes thickly digitiform, the lateral sepals oblong, oblique, subacute, 3-4 mm long, 1-1.5 mm wide, variously connate from below the middle to above the middle; **petals** translucent purple, membranous, oblong, obtuse, 2-2.75 mm long, 0.3-0.75 mm wide, 1-veined; **lip** dark purple, subobovate-trilobed, 2-2.5 mm long, 0.75-1.25 mm wide, the margins erect near or above the middle with variably formed lobes, more or less constricted above the lobes with the apex rounded or subtruncate and often deflexed, the disc shallowly concave between calli within the lobes, the base subtruncate, hinged to the column-foot; **column** shallowly winged above the middle, denticulate at the apex, 1.5-2 mm long, the anther and stigma ventral, the foot less than 1 mm long.

COSTA RICA: **Cartago**: Peralta, La Fuente, 24 June 1914, *C.H. Lancaster 914* (Holotype: AMES). **Alajuela**: San Ramón, 1869, *A.R. Endres 59 (305)* (W). **Guanacaste**: La Tejona, north of Tilarán, alt. 600-700 m, 25 Jan. 1926, *P.C. Standley & J. Valerio 45976* (AMES). Abangares, upper San Gerardo valley, north of Monteverde, alt. 1500 m, 12 Oct. 1989, *W. Haber & W. Zuchowski 9559* (MO); data missing, *W. Haber 8921* (CR), C. Luer illustr. 16510; pasture above Santa Elena, alt. 1600 m, 19 Mar. 1995, *C. Luer, J. Luer, J. Atwood & W. Rhodehamel 17422* (MO). **Puntarenas**: east of Santa Elena, alt. 1500 m, 6 Aug. 1988, *J.T. Atwood & W. Haber 88-39* (AMES, SEL); Monteverde Reserve, TV tower, alt. 1750 m, 26 June 1989, *J.T. Atwood 89-246* (AMES, K, SEL); *J.T. Atwood 88-39* (CR), C. Luer illustr. 17053; leeward cloud forest, alt. 1500 m, 17 Feb. 1992, *S. Ingram & K. Ferrell-Ingram 1349* (MO, SEL). Sine loc., ca. 1876, *A. Endres 49* (illustr. at W).
NICARAGUA: **Matagalpa**: north of Matagalpa, 29 Dec. 1973, *J.T. Atwood, S.A. Marsall, D.A. Neill 6922* (AMES, US).
EL SALVADOR: road to San Fernando, alt. 1450 m., 9 Oct. 1975, *F. Hamer 518* (AMES).
PANAMA: **Chiriquí**: Quebrada Aleman, north of Los Planes de Hornito, alt. 1200 m, 13 Mar. 1982, *S. Knapp, W.J. Kress & B. Hammel 4150* (MO); below Fortuna dam, alt. 1100 m, 16 Feb. 1985, *C. Luer, J. Luer, R. & K. Dressler 10576* (MO).
GUATEMALA: **San Marcos**: above San Rafael, alt. 1600 m, 13 July 1977, *T.B. Croat 40913* (MO). **Alta Verapaz**: Finca Chicatal, near Cobán, collected and cultivated by Oscar Archila, 13 Feb. 1990, *C. Luer 14636* (MO).
MEXICO: **Chiapas**: east of Comitán, Lake Tziscao, alt. 1350 m, 12 Mar. 1936, *O. Nagel 5493* (AMES).

This species is widely distributed, occasionally abundantly so, across Central America. It varies in the shape of the leaves from broadly elliptical to narrowly obovate. The usually deep purple flowers are borne successively in a loose, weak,

flaccid raceme. The tip of the dorsal sepal is variously thickened into a concave, thimble-like tube, or a solid finger-like extension. Sometimes the apex is totally free of any such development. The lip is even more variable with calli and lateral lobes above the middle with a constriction below the apical segment. There is no correlation between variations of the apex of the dorsal sepal and lobes of the lip, the variations apparently occurring at random within a population.

Specklinia simpliciflora (Dod) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Bas.: *Pleurothallis simpliciflora* Dod, Moscosoa 1(2): 51, 1977.
Ety.: From the Latin *simpliciflorus*, "with simple flowers."

Plant very small, epiphytic, caespitose; roots slender but as broad as the ramicauls. Ramicauls slender, 6-10 mm long, enclosed by 2 loose, tubular sheaths. **Leaves** erect, coriaceous, narrowly elliptic-obovate, subacute to obtuse, petiolate, 10-18 mm long, 3-5 mm wide, cuneate below into a petiole 2-4 mm long. **Inflorescence** an erect, simultaneously few-flowered raceme, to 20 mm long including the peduncle 7-10 mm long, from a node near the end of the ramicaul; floral bract infundibular, 1-1.5 mm long; pedicel 1.2 mm long; ovary 0.5 mm long; **sepals** glabrous, carinate, the dorsal sepal elliptical-oblong, acute, thick at the tip, 3 mm long, 1 mm wide, faintly 3-veined, the lateral sepals oblique, connate basally, 2.75 mm long, 0.9 mm wide, 1-veined, the apex acute, thickened; **petals** translucent, obovate-spathulate, obtuse, with the margin minutely erose, 1.5 mm long, 0.6 mm wide, 1-veined; **lip** oblong, 1.75 mm long, 0.5 mm wide, round at the apex, the margins microscopically erose, the disc shallowly channeled between a pair of longitudinal calli below the apical quarter, the apical quarter with a low, subconical callus, cellular-verrucose, base truncate, hinged to the column-foot; **column** semiterete, winged above the basal third, minutely undulate, 1 mm long, the foot 1 mm long, with the anther hooded and the stigma ventral.

DOMINICAN REPUBLIC: El Cercado, Jorgillo, Loma Los Patios, alt. 1520 m, collected 19 Nov. 1973, flowered in cultivation in the Jardín Botánico Nacional Dr. Rafael M. Moscoco, 12 Oct. 1976, *D.D. Dod 582* (Holotype: SDM; Isotype: NY); same collection flowered in cultivation in the Jardín Botánico Nacional, 15 May 1982, C. Luer illustr. 19034.

This tiny species is apparently rare and endemic in the Dominican Republic, known only from the type collection. It is very similar to *Specklinia formondii* (Dod) Pridgeon & M.W.Chase from Haiti. Both are small caespitose plants with a simultaneously few-flowered raceme. The sepals are free, carinate and acute, those of *P. formondii* being somewhat larger with the laterals connate. The spathulate petals of *P. simpliciflora* are minutely erose. The lip of both is longitudinally channeled between marginal calli below a low callus near the apex. The column-foot lacks calli seen in *P. formondii*.

Specklinia spiculifera (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Bas.: *Pleurothallis spiculifera* Lindl., Folia Orch. *Pleurothallis* 43, 1859.
Ety.: From the Latin *spiculifer*, "spicule-bearing," probably referring to the habit.

Syn.: *Pleurothallis acutissima* Lindl., Folia Orch. *Pleurothallis* 43, 1859.
Ety.: From the Latin *acutissimus*, "very acute," probably referring to the leaves.

Syn.: *Pleurothallis sertularioides* var. *trinitensis* Griseb., Fl. Br. W. Ind. Is. 609, 1864.
Ety.: Named for Trinidad where the species was collected.

Plant small, epiphytic, long-repent, the rhizome slender, 5-10 mm long between ramicauls; roots slender along the rhizome. Ramicauls suberect, 2-4 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 7-17 mm long, 2-4 mm wide, narrowly cuneate below into the subpetiolate base. **Inflorescence** a loose, successively 3- to 4-flowered raceme, 20-45 mm long including the peduncle 15-20 mm long, borne laterally from the ramicaul; floral bracts glabrous, 1-1.5 mm long; pedicel 0.5-1.5 mm long; ovary 1-1.5 mm long; **sepals** light yellow to light rose, glabrous, the dorsal sepal oblong-ovate, acute, 3.25-4 mm long, 0.9-1.5 mm wide, 3-veined, the lateral sepals oblong to ovate, slightly oblique, acute to narrowly obtuse, 3.25-4 mm long, 0.7-1.4 mm wide, 2- to faintly 3-veined, barely connate at the base; **petals** narrowly elliptical, oblong, acute, acuminate, 3.3-4 mm long, 0.25-0.75 mm wide, 1-veined; **lip** yellow or red, glabrous, entire to ovate-trilobed, with the apex obtuse,

1.75-3 mm long, 1.3-1.6 mm wide across the lobes expanded when present, the lobes erect, below the middle with the anterior margin antrorse, acute or obtuse, the disc featureless or thickened along the midvein, the base truncate, hinged to the column-foot; **column** semiterete, winged above the middle, dentate at the apex, 1.5 mm long, the foot 1 mm long, the anther, rostellum and stigma ventral.

BRAZIL: **Amazonas**: San Carlos del Rio Negro, Oct. 1853, *R. Spruce 3154* (Holotype of *Pleurothallis spiculifera*: K; Isotypes: P, W), C. Luer illustr. 18920; near San Gabriel da Cachoeira, Rio Negro, Jan.-Aug. 1852, *R. Spruce 2302* (holotype of *P. acutissima*: K; isotypes: BR, P, W), C. Luer illustr. 18921. Para Compey, Aug. 1854, *Wullschlegel 1588* (W); Mun. Guainía, 25 Jan. 1998, *G.A. Romero et al. 3189* (AMES, TFAV), C. Luer illustr. 18783.
TRINIDAD: Arima, Feb. 1840, *Dr. Bradford s.n.* (holotype of *P. polygonoides* var. *trinitensis*: K); Arima, 1877-1800, *A. Fendler 794* (K); Aripo, 16 Apr. 1908, *W.E. Broadway 2333* (AMES); Aripo Savannah, 13 Feb. 1915, *W.G. Freeman s.n.* (AMES, TRIN); 26 June 1925, *W.E. Broadway s.n.* (K); Mora Forest between Valencia and Sangre Grande, 26 Aug. 1977, *D. Philcox & P. Maas 8229* (K); near summit of El Tucuche, 5 Sept. 1979, *P.M. Catling & K.L. Catling s.n.* (AMES), C. Luer illustr. 18925.
TOBAGO: sine loc., ("var. trinitensis"), 7 Nov. 1909, *W.E. Broadway 3014* (BR); sine loc., *Catling s.n.* (AMES), C. Luer illustr. 18925.
GUYANA: *Schomburgk s.n.* (W); June 1841, *Drake & W.N. Campbell s.n.* (W); Barama Falls, Nov. 1896, *E.F. im Thurn 70* (K), C. Luer illustr. 18923; Amakuru Falls, 26 July 1897, (acute lobes) *E.F. im Thurn 70* (K), C. Luer illustr. 18923; Macea Falls, Waini River, July 1906, *J.E. Becket 8503* (K), C. Luer illustr. 18922; Upper Mazaruni District, adjacent to Eboropu Mountain, alt. 470 m, 5 Apr. 1979, *P.J. Edwards 1150* (K).
SURINAME: Region Pará, *Wullschlegel 1588* (BR).
FRENCH GUIANA: Montagne de la Trinité, 15 Jan. 1984, *J.J. de Granville 6289* (CAY, MO, P, U); Saut Vata, Bassin du Sinnmary, 3 Oct. 1993, *G. Cremers 13251* (CAY).
ECUADOR: *Napo*: Bermejo, alt. 450-600 m, Apr. 1990, *A. Hirtz 4835* (MO), C. Luer illustr. 15325.
BOLIVIA: **La Paz**: Sud Yungas, Alto Beni, alt. 930 m, 1 Sept. 1991, *C. Luer, J. Luer, R. Vásquez & L. Moreno 15397* (MO).

This little species is variable in its wide distribution in lowland northern South America from Ecuador across Amazonian Brazil to Trinidad and French Guiana. All collections are long-repent with very short ramicauls and erect, narrow leaves that are surpassed by a successively few-flowered raceme. The sepals are widely expanded, and the narrow petals are as long as, or longer than the sepals. The lip is variously three-lobed below the middle. In Spruce's type collection of *Specklinia spiculifera*, the lobes are indistinct, merely rounded sides that occupy the lower half of the lip. In his type collection of *Pleurothallis acutissima*, the lobes are erect, uncinate and antrorse. All degrees between the two extremes occur. See illustrations 35a. and 35b.

Specklinia stillsonii (Dod) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.
Bas.: *Pleurothallis stillsonii* Dod, Moscosoa 3: 107, 1984.
Ety.: Named in honor of Lester Stillson who first collected this species.

Plant very small, epiphytic, caespitose, forming dense tufts; roots fleshy, broader than the ramicauls. Ramicauls slender, 1-2 mm long, enclosed by 2 loose, tubular sheaths. **Leaves** overlapping, coriaceous, subcircular, obtuse to rounded at the apex, 5-8 mm long, 3.5-5 mm wide, margined and minutely ciliate-denticulate, cuneate below into a petiole ca. 1 mm long. **Inflorescence** a single, orange flower, sometimes followed by a second; peduncle less than 1 mm long, from a node near the base of the ramicaul; floral bract tubular, 1.5 mm long; pedicel 5 mm long; ovary 1 mm long; **sepals** glabrous, subcarinate, the dorsal sepal elliptical-ovate, acute, concave, 5 mm long, 1.5 mm wide, 3-veined, the lateral sepals connate into an oblong-ovate synsepal, 5 mm long, 1.75 mm wide, the apex obtuse, minutely bifid; **petals** translucent, narrowly elliptical-obovate, subacute, 2 mm long, 0.6 mm wide, 1-veined; **lip** purple, thick, oblong, 1.75 mm long, 0.5 mm wide, round at the apex, the margins minutely ciliate, the disc shallowly channeled between a pair of longitudinal calli along the middle two-thirds the length, the base subtruncate, hinged to the column-foot; **column** semiterete with marginal wings, dentate at the apex, 1.5 mm long, the foot 1 mm long, with the anther hooded and the stigma ventral.

HAITI: Massif de la Hotte, Camp Perrin, above Riviere Glacé, alt. 850 m, collected 23 Apr. 1992, flowered in cultivation 19 Oct. 1982, *D. Dod 894* (Holotype: JBSD; Isotypes: AMES, MO, NY, US), C. Luer illustr. 9151; Massif de la Hotte, Les Cayes, Formond, alt. 1150 m, flowered in cultivation 28 Oct. 1982, *D.D. Dod 899* (JBSD).

This minute species is apparently uncommon and endemic in the mountains of Haiti, along with the very similar *Specklinia mornicola* (Mansf.) Luer. *Specklinia stillsonii* is similarly characterized by little tufts of overlapping leaves, but the leaves are subcircular and minutely denticulate. One orange flower, or sometimes two according to Dod, is produced by a very short peduncle and a short pedicel. The dorsal sepal and synsepal are similar; the petals are obovate and acute; and the lip is oblong, minutely ciliate, and shallowly channeled centrally. *Specklinia stillsonii* may prove to be a variation of *S. mornicola*.

Specklinia trichyphis (Rchb.f.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Bas.: *Pleurothallis trichyphis* Rchb.f., Flora 48: 276, 1866.

Ety.: One of Reichenbach's cryptic, indecipherable, Greek proposals.

Plant minute, epiphytic, caespitose; roots slender, as thick as the ramicaul. Ramicauls slender, 1.5-1.75 mm long, enclosed with 2 loose, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, obtuse, sessile, 4-5.5 mm long, 2.5-3 mm wide, cuneate below into the base. **Inflorescence** a congested, 2- to 3-flowered fascicle of successive flowers, borne by an erect peduncle, 10-12 mm long, from a node about the middle of the ramicaul; floral bracts oblique, 1-1.25 mm long; pedicels 1.5 mm long; 0.5 mm long; **sepals** membranous, glabrous, the dorsal sepal elliptical, acute, 3 mm long, 1.2 mm wide, 3-veined, free from the lateral sepals, the lateral sepals connate into an ovate, obtuse, minutely bifid, bicarinate lamina, 2.8 mm long, 1.5 mm wide, 2-veined; **petals** translucent, membranous, elliptical, obtuse, 1.2 mm long, 0.5 mm wide, 1-veined; **lip** elliptical-oblong, 1.8 mm long, 0.75 mm wide, with the apex broadly rounded, the disc featureless, 3-veined, the base truncate, delicately hinged to the tip of the column-foot, hinged to the rounded tip of the column-foot; **column** semiterete, shallowly winged, 1 mm long, the anther and stigma ventral, the foot thick, 0.5 mm long.

CUBA: 1860-64, *C. Wright 3345* (Holotype: K; Isotypes: AMES, BR, HAC, P, W-drawing); C. Luer illustr. 19021.

This extremely small species is probably not as rare as the single collection known would seem to suggest. The tiny, clustered leaves about five millimeters long, and hidden in mosses, would be difficult to see and identify. A few, successive flowers are produced in a congested fascicle borne by a hair-like peduncle about one centimeter long. The flowers are membranous with the dorsal sepal and synsepal acute. The petals are membranous and obtuse. The lip is elliptical, rounded at the apex, and three-veined.

Specklinia wrightii (Rchb.f.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 265, 2004.

Bas.: *Pleurothallis wrightii* Rchb.f., Flora 48: 276, 1865.

Ety.: Named in honor of C. Wright who collected this species among numerous other Cuban species.

Syn.: *Pleurothallis richteri* H.Dietrich, Die Orchidee 35(6): 223, 1984.

Ety.: Named for Walter Richter, well-known contemporary grower of orchids and bromeliads.

Plant very small, epiphytic, densely caespitose to shortly repent; roots slender but proportionately thick. Ramicauls erect, 1-2 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, subacute to obtuse or rounded at the apex, subpetiolate, 5-6 mm long including a petiole ca. 0.5 mm long, 3.5-4 mm wide, 1.5 mm thick, the base broadly cuneate into the petiole. **Inflorescence** a single, ?successive flower, borne by an erect peduncle 2 mm long, from a node on the ramicaul; floral bract infundibular, acute, 1 mm long; pedicel 1 mm long; ovary 1 mm long; **sepals** fleshy, thickened at the apex, glabrous, the dorsal sepal ovate-triangular, narrowly obtuse, 3.5 mm long, 2 mm wide, 1-veined, the lateral sepals ovate-triangular, narrowly obtuse, 3.5 mm long, 1.75 mm wide, barely 2-veined, forming a shallow mentum with the column-foot, connate basally; **petals** membranous, glabrous, narrowly obovate, obtuse, 2 mm long, 0.6 mm wide, 1-veined; **lip** thick, oblong, narrowed to a thick, subtruncate apex, 2.4 mm long, 0.9 mm wide, the disc shallowly channeled centrally between thickened halves, the base subtruncate, hinged to the tip of the column-foot; **column** narrowly winged above the

middle, 1.5 mm long, minutely denticulate at the apex, the anther and stigma ventral, the foot 1.5 mm long with a pair of globular calli at the base of the foot.

CUBA: Oriente, near Monte Verde, Jan.-July 1859, *C. Wright 1509* (Holotype: K; Isotypes: BR, K, LE, W, illustr. only); sine loc., collected with *P. murex*, *C. Wright s.n.* (W), C. Luer illustr. 18916. **Guantanamo**: Baracoa, Viega de la Palma, near Río Duaba, 20 Feb. 1979, *J. Bisse, H. Dietrich et al, s.n.* (holotype of *Pleurothallis richteri*: HAJB).

This tiny species is apparently endemic in eastern Cuba. It is another eighteenth century collection by Charles Wright and described by Reichenbach. His sketch is at W, and a few isotypes are extant, but no flowers remain. However, an unidentified collection by Wright was found at W mounted on a sheet with *Pleurothallis murex* Rchb.f. Hydration of a flower reveals it to match Reichenbach's sketch of *Specklinia wrightii* (Rchb.f.) Luer. The sepals are narrowly obtuse and described as being purple. The petals are narrowly obovate and obtuse. The lip is oblong with a narrowed and thickened apex, as described and seen in his sketch. A pair of globular calli are present on the column-foot which was not noted by Reichenbach.

I have not had the good fortune to illustrate many of these minute species first collected by Wright from fresh or pickled fresh flowers. Consequently, the presented illustrations have been made from dry material, which is often of inferior quality.

Specklinia yucatanensis (Ames & C.Schweinf.) Pridgeon & M.W.Chase, Lindleyana 16: 260, 2001.

Bas.: *Pleurothallis yucatanensis* Ames & C.Schweinf., Bot. Mus. Leafl. 1(2): 4, 1932.

Ety.: Named for state of Yucatan where the species was collected.

Syn.: *Anathallis yucatanensis* (Ames & C.Schweinf.) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6: XI, 2003.

Plant small, epiphytic, shortly repent, rhizome 1-2 mm long between ramicauls; roots proportionately thick, scattered along the rhizome. Ramicauls erect, stout, 1-2 mm long, enclosed by a thin, tubular sheath. **Leaf** erect, thickly coriaceous, narrowly elliptical to narrowly obovate, obtuse, 8-18 mm long, 2-5 mm wide, cuneate below into the base. **Inflorescence** a loose raceme of 2-3 successive flowers, 10-30 mm long including the filiform peduncle 10-15 mm long, emerging laterally from the ramicaul; floral bracts 1-1.5 mm long; pedicels 1-1.5 mm long; ovary 0.6-0.75 mm long; **sepals** yellow-green, glabrous, carinate, thicker toward the apex, the dorsal sepal narrowly oblong-ovate, acute, concave in lower half, 3-3.5 mm long, 1 mm wide, 1-veined (or faintly 3-veined), the lateral sepals free, narrowly oblong-ovate, acute, 2.5-3 mm long, 1 mm wide, 1-veined (or faintly 2-veined); **petals** translucent, narrowly ovate-triangular, thickened toward the apex, acute, 2.5 mm long, 0.5 mm wide; **lip** yellow, oblong, rounded at the apex, 1.5 mm long, 0.3-0.5 mm wide, the margins thin and erect below the middle, cellular-pubescent, the disc slightly convex, featureless, the base truncate without a pair of lobules, hinged to the column-foot; **column** semiterete with irregular wings, microscopically denticulate, 1 mm long, the foot stout, ca. 0.25 mm long, with the anther shortly hooded and the stigma ventral.

MEXICO: **Yucatan**: Campeche, Tuxpeña, 8 Nov. 1931, *C.L. Lundell 912* (Holotype: AMES; Isotype: US). **Quintana Roo**: Municip. Othón P. Blanco, north of La Union, alt. 50 m, 5 Dec. 1997, *G. Carnevali et al. 4544* (MO), C. Luer illustr. 19042.
GUATEMALA: **Izabal**: Virginia, *M.W. Lewis 26* (AMES); near Puerto Barrios, La Vigia, between Bananera and Quiriguá, *M.W. Lewis 26* (AMES). **Baja Verapaz**: Montaña El Quisis, alt. 1800 m, collected by and cultivated by H. Ibañez in Cobán, 27 Nov. 1990, *C. Luer 14859* (MO); near Cobán, collected and cultivated by O. Mittlestaedt in Cobán, 27 Nov. 1990, *C. Luer 14833* (MO).
BELIZE: south of Orange Walk, collected by Fred Fuchs, flowered in cultivation Nov. 1974, *C. Luer 0141* (SEL).
NICARAGUA: **Jinotega**: Mt. Kilambe, alt. 1170 m, *A.H. Heller 11011* (SEL, drawing).

Specklinia yucatanensis is distinguished by a short, creeping rhizome; ramicauls with thick, erect, narrowly obovate leaves; a loose, few-flowered raceme of small yellow flowers slightly longer than the leaves; non-glandular pedicels and floral bracts; acute sepals and petals; and an oblong lip with a rounded apex and thin, erect margins below the middle, not lobulate. It is superficially similar to *Panmorphia sertularioides* (Sw.) Luer, which is distinguished by the minute lateral lobes and basal lobules of the lip.

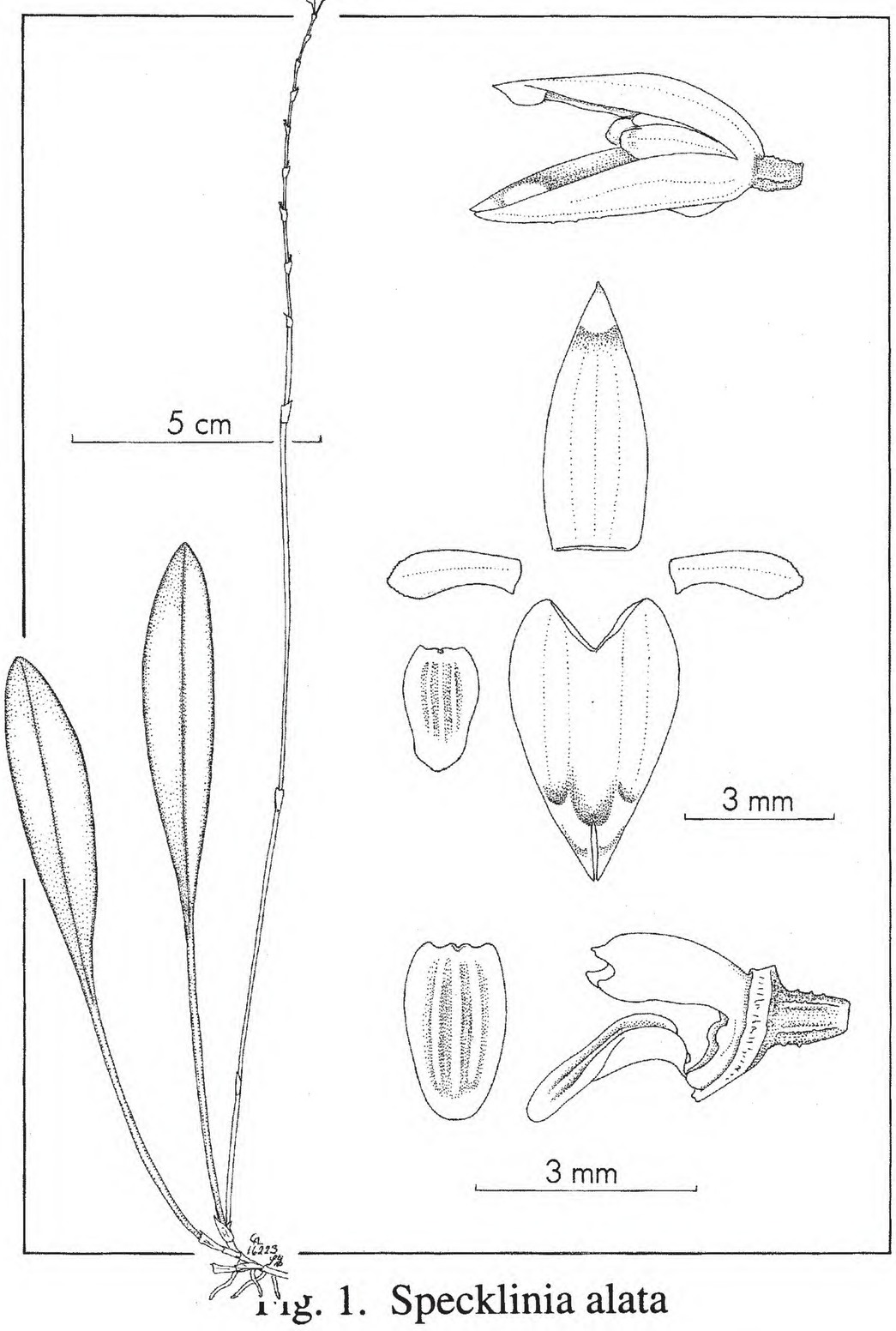


Fig. 1. Specklinia alata

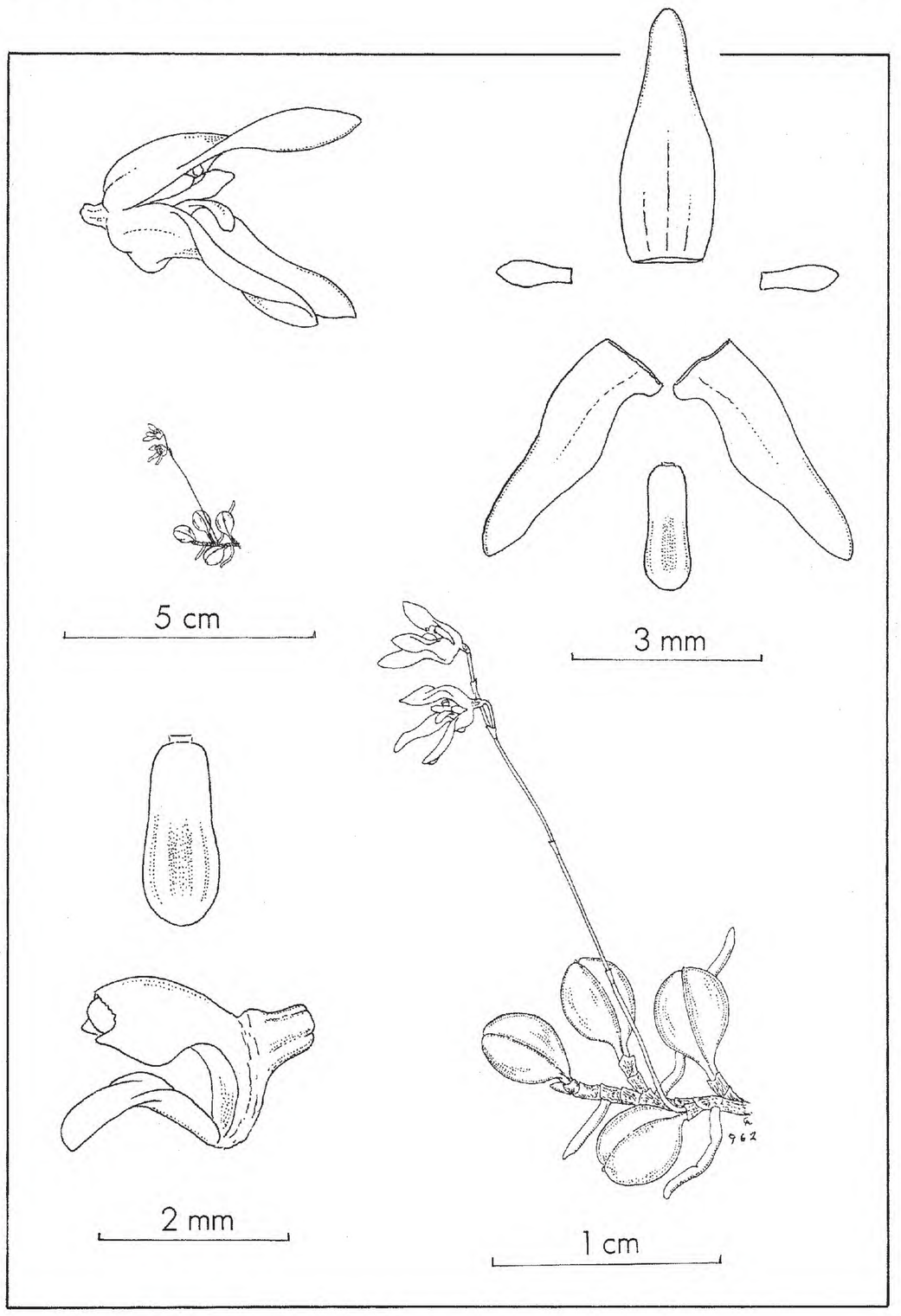


Fig. 2. Specklinia calyptrostele

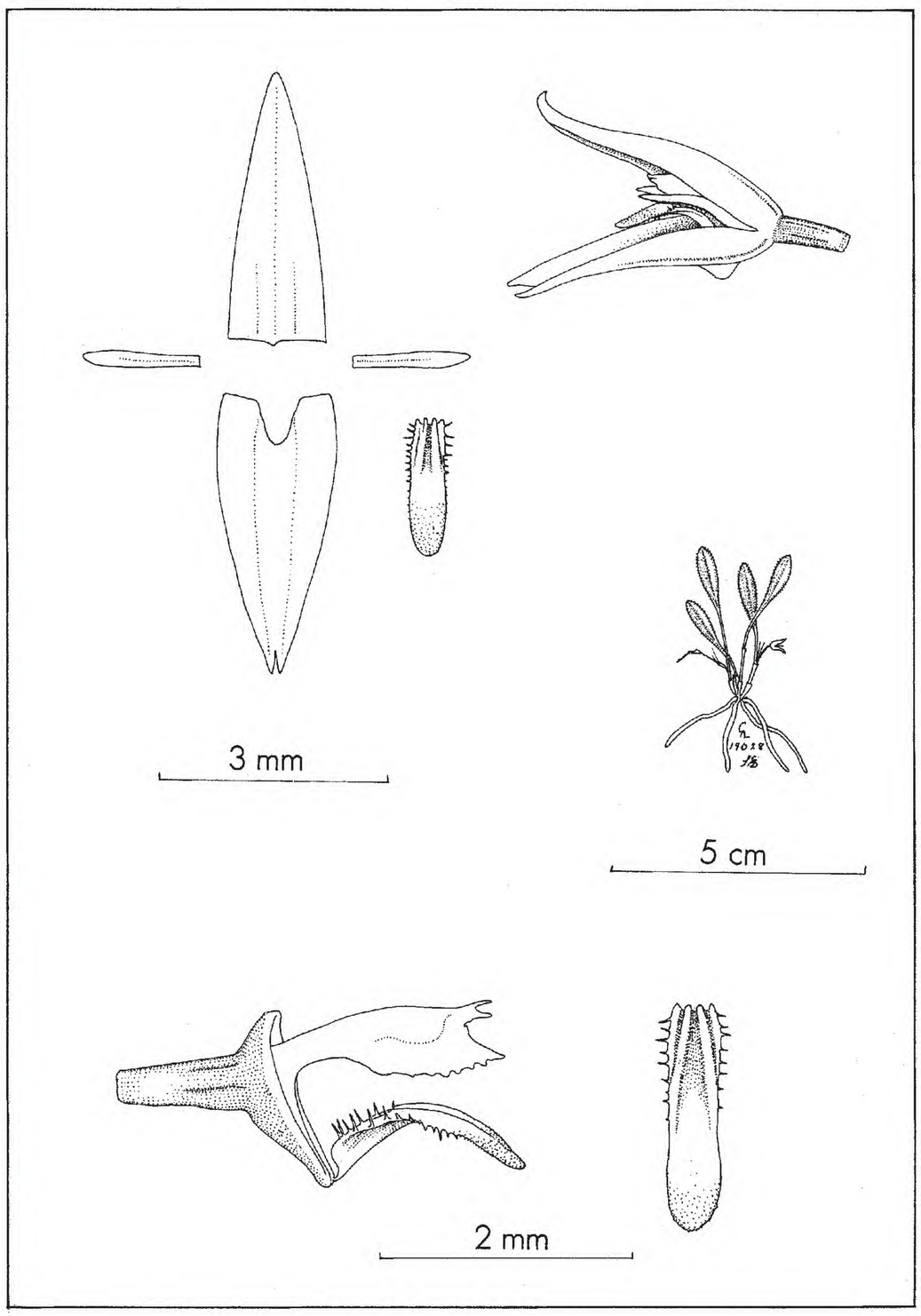


Fig. 3. Specklinia ciliifera

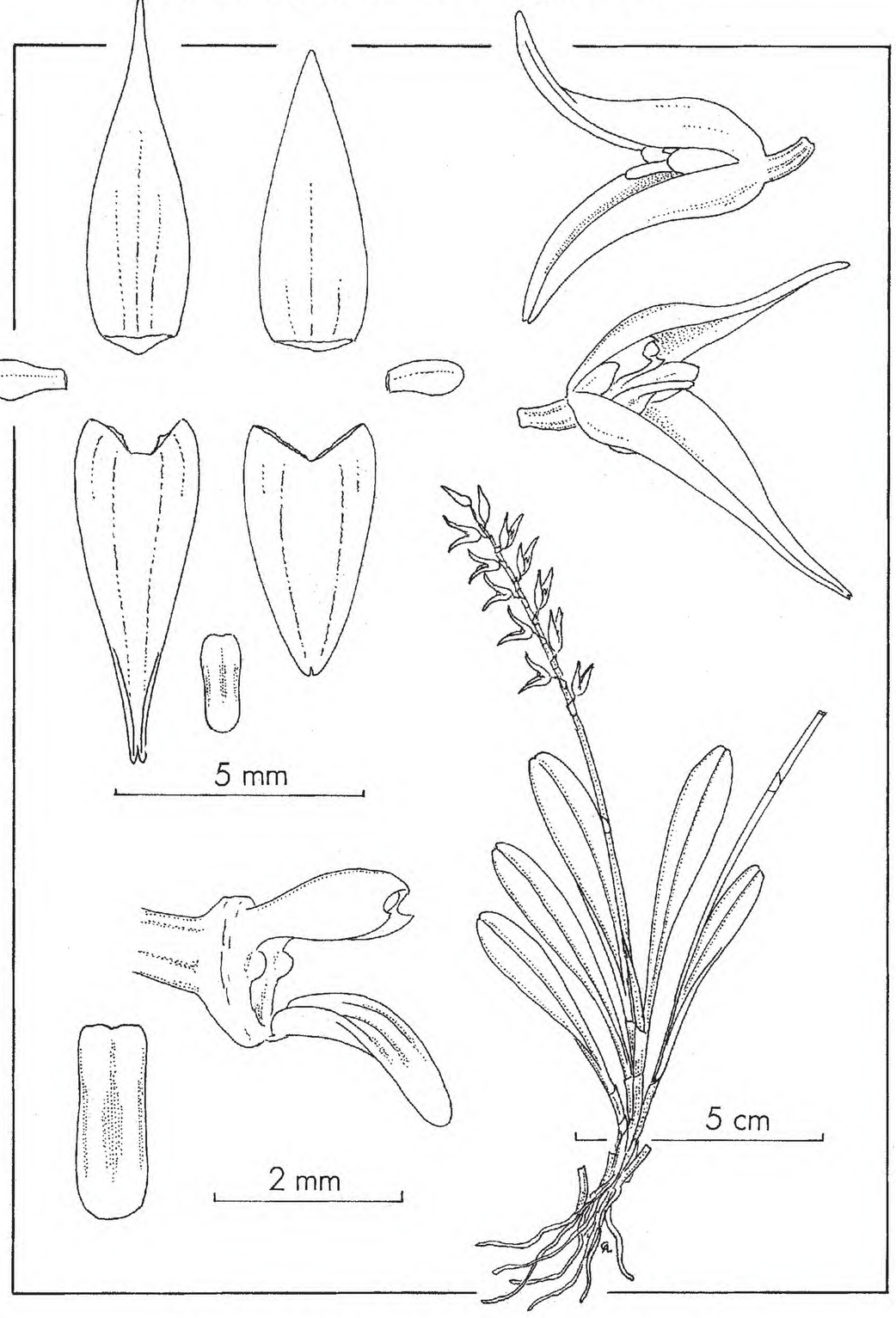


Fig. 4. Specklinia costaricensis

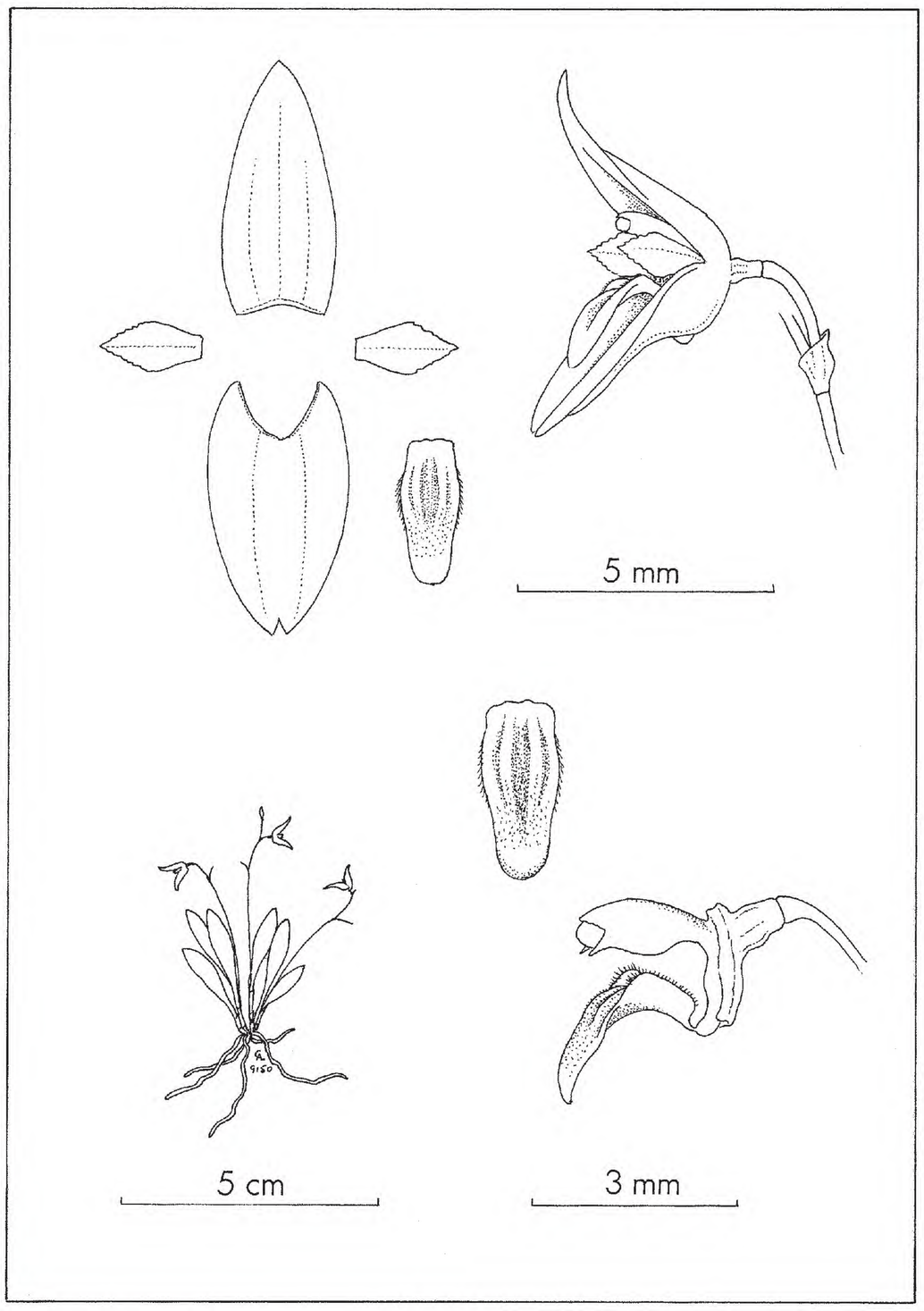


Fig. 5. Specklinia curtisii

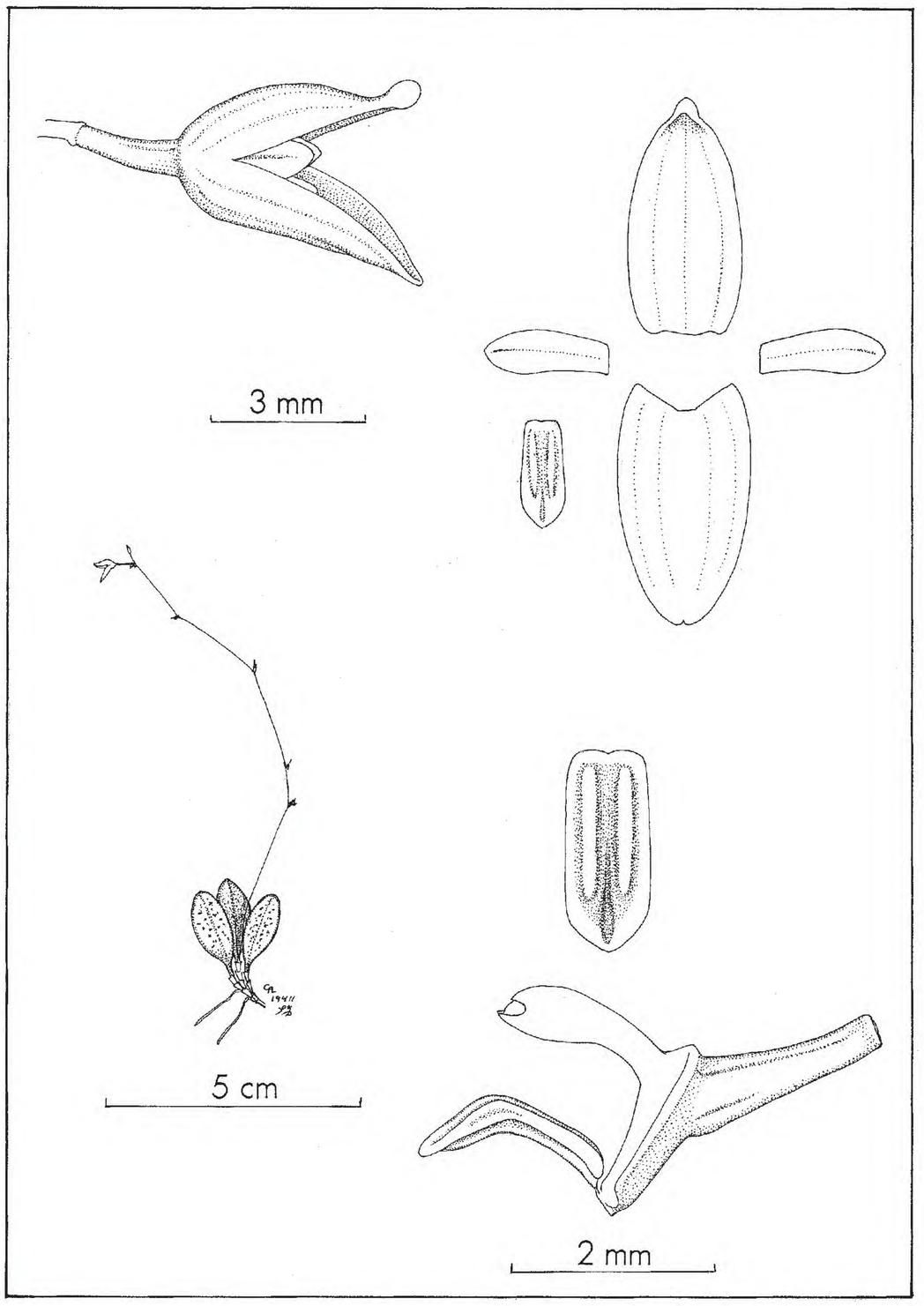


Fig. 6. Specklinia digitalis

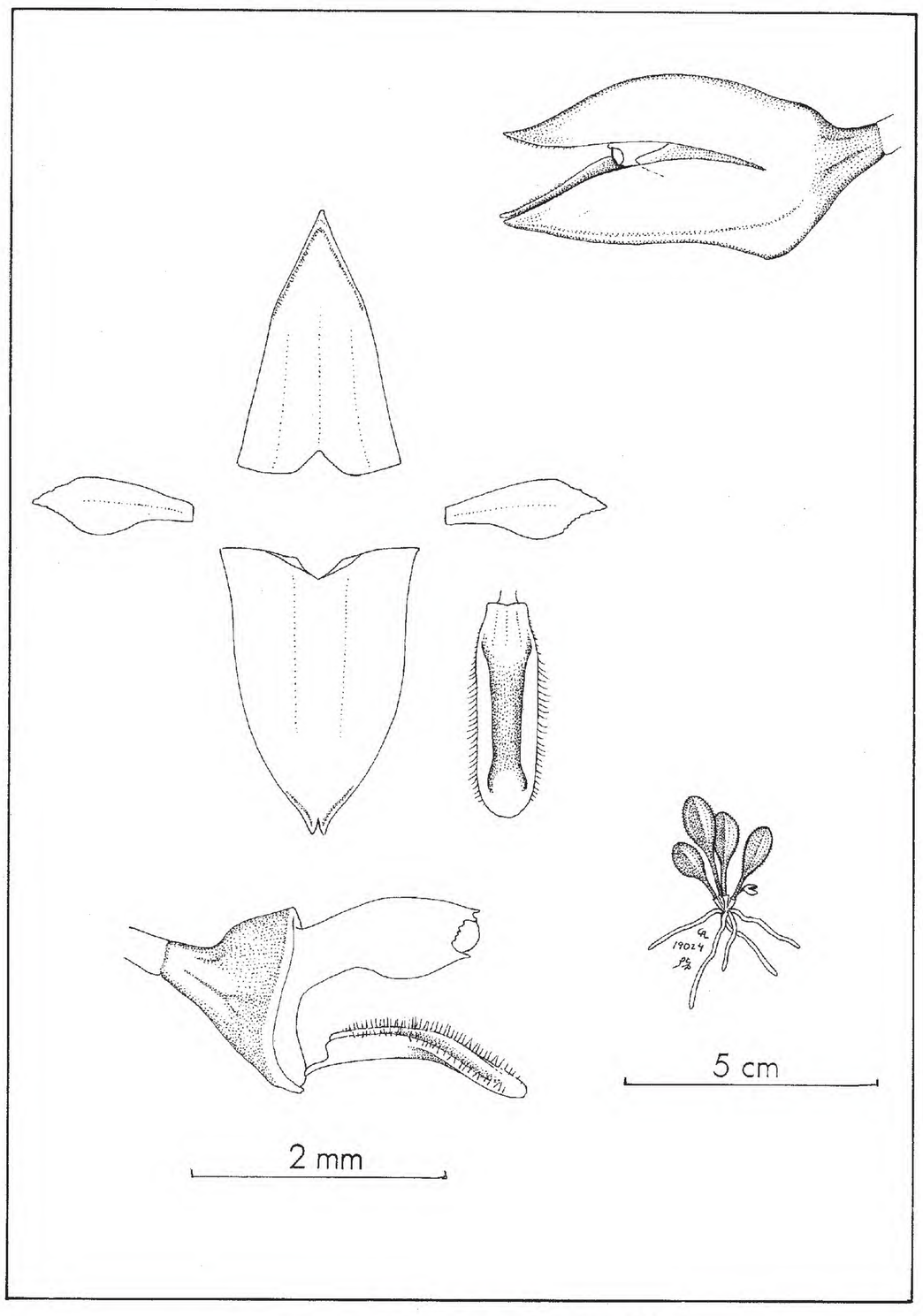


Fig. 7. Specklinia dodii

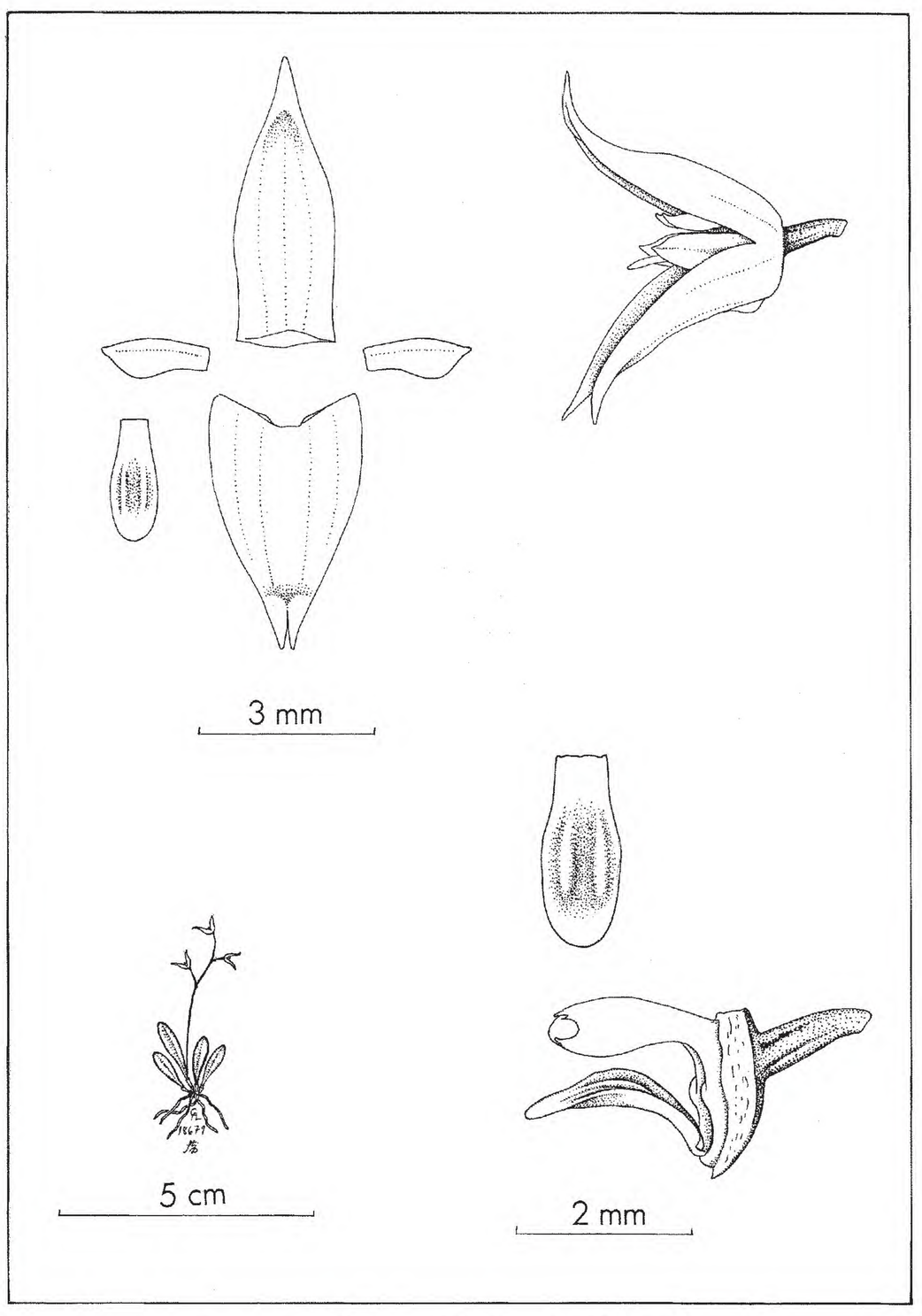


Fig. 8. Specklinia feuilletii

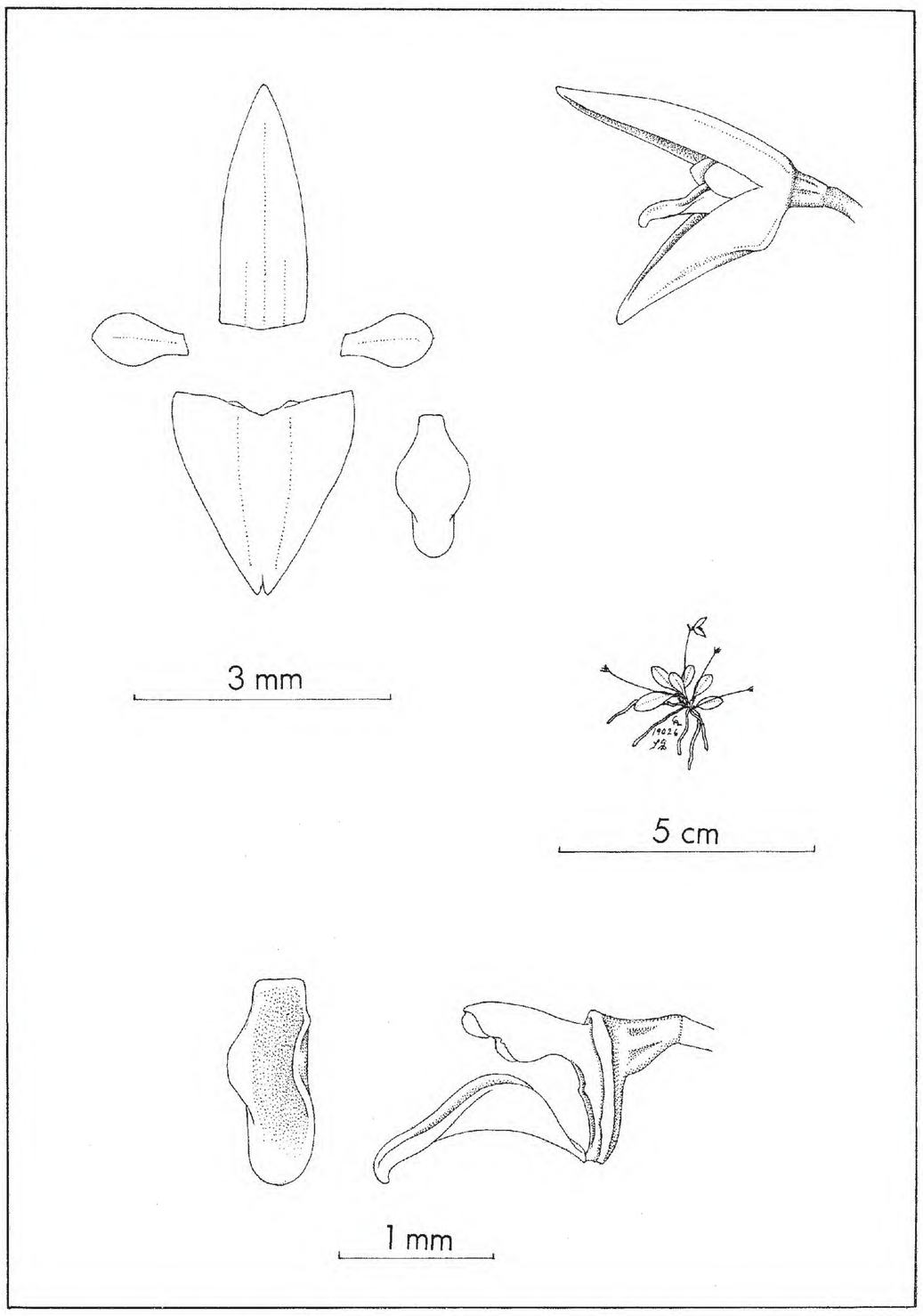


Fig. 9. Specklinia flosculifera

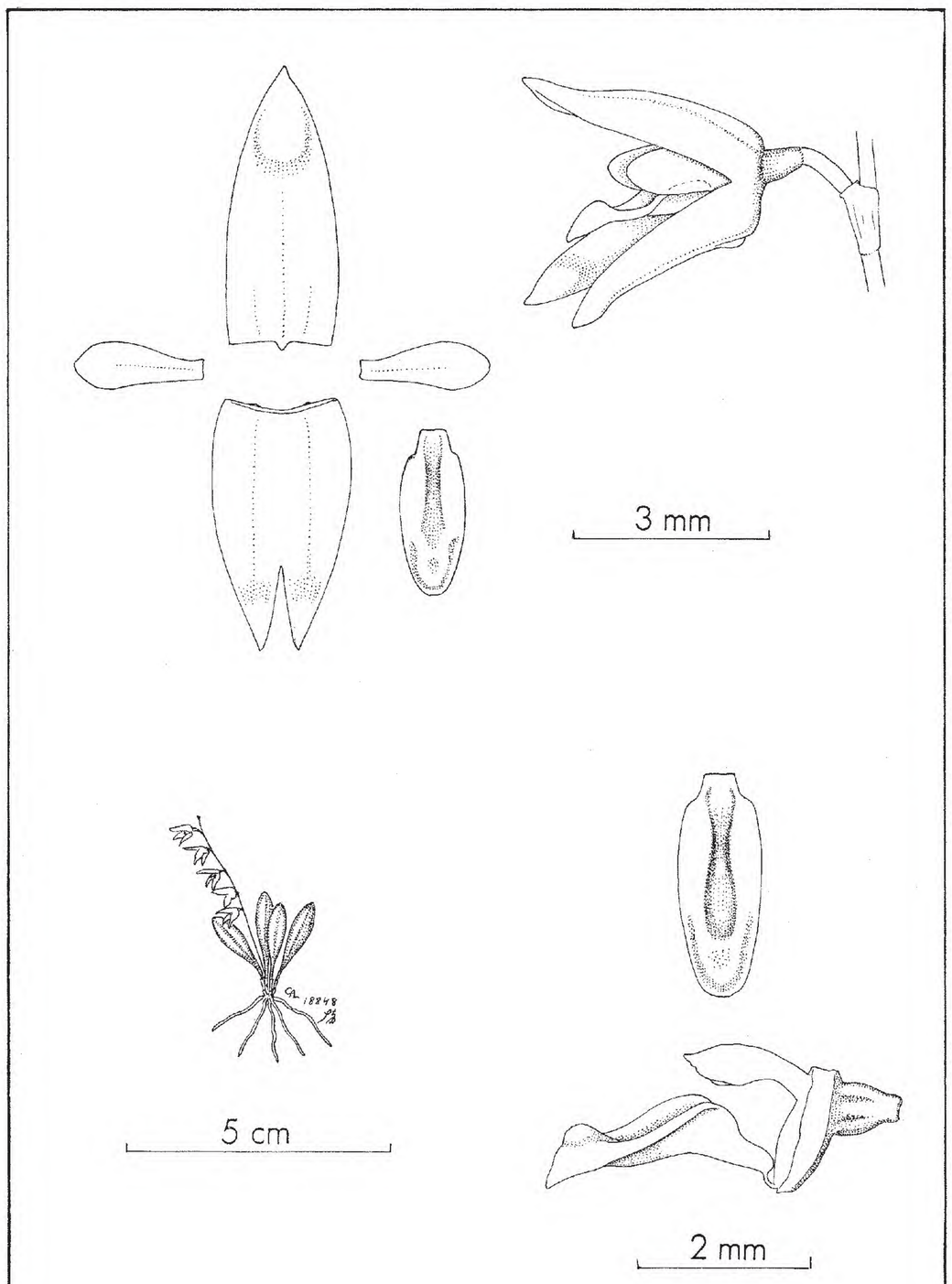


Fig. 10. Specklinia formondii

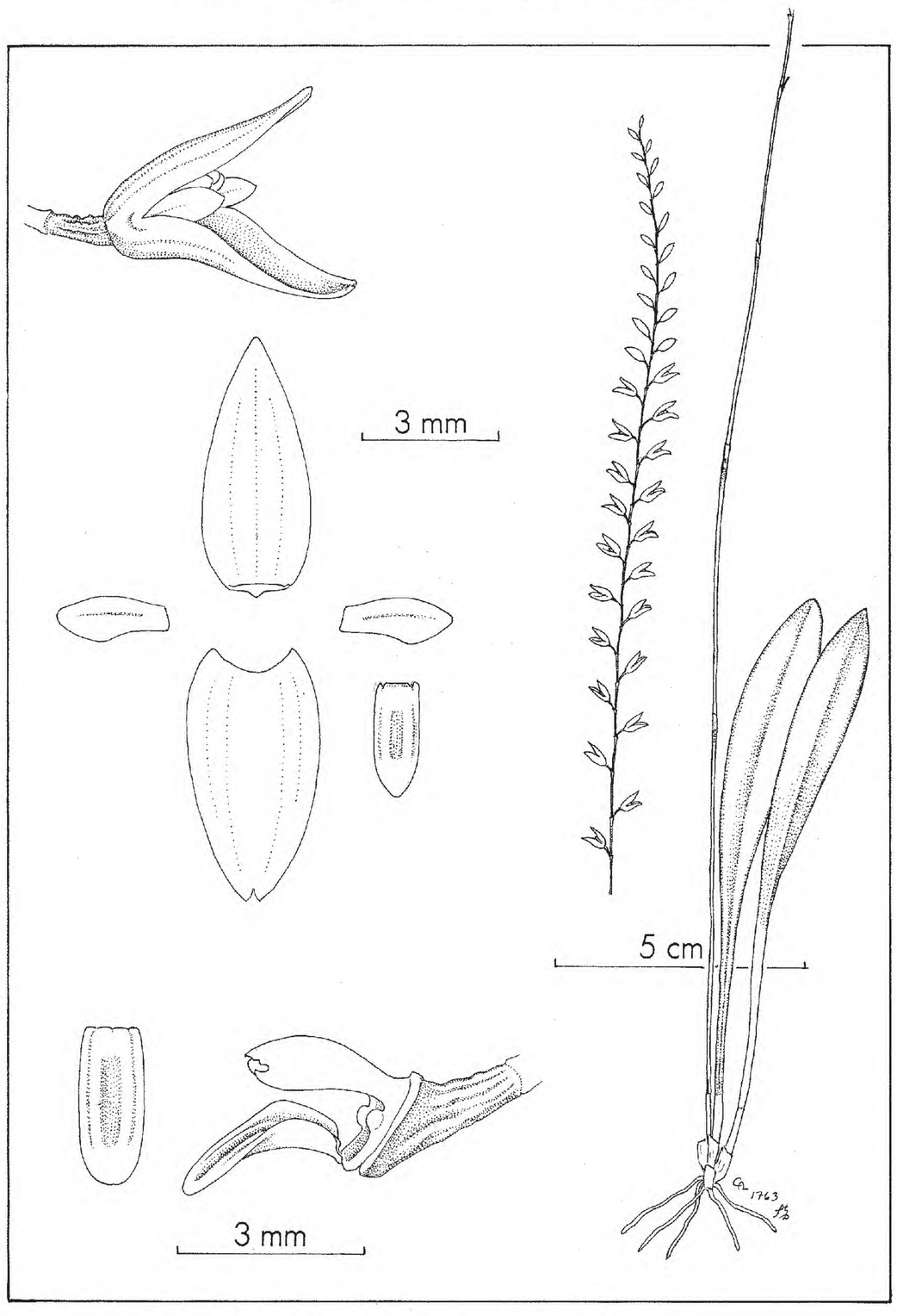


Fig. 11. Specklinia gracillima

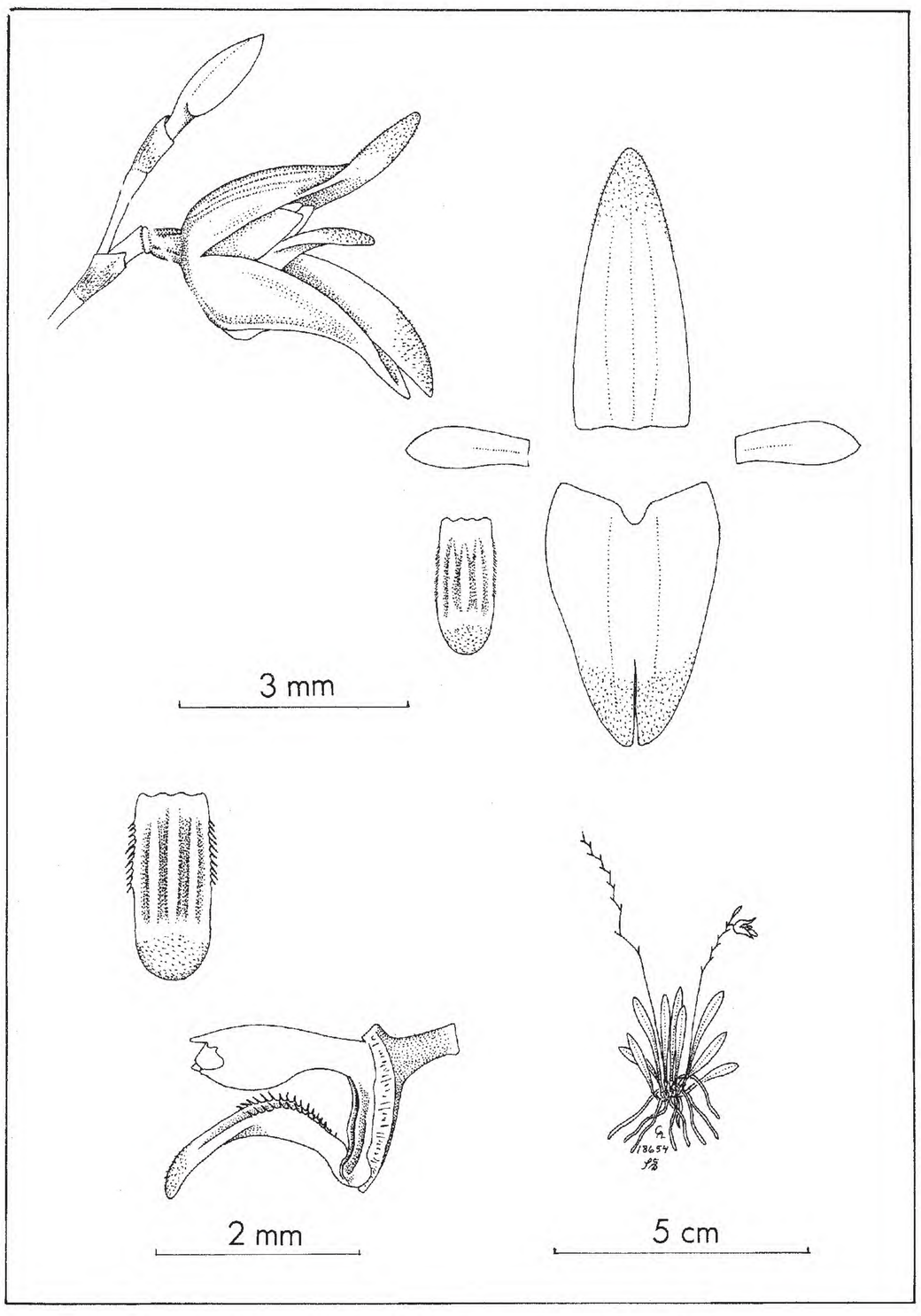


Fig. 12. Specklinia grisebachiana

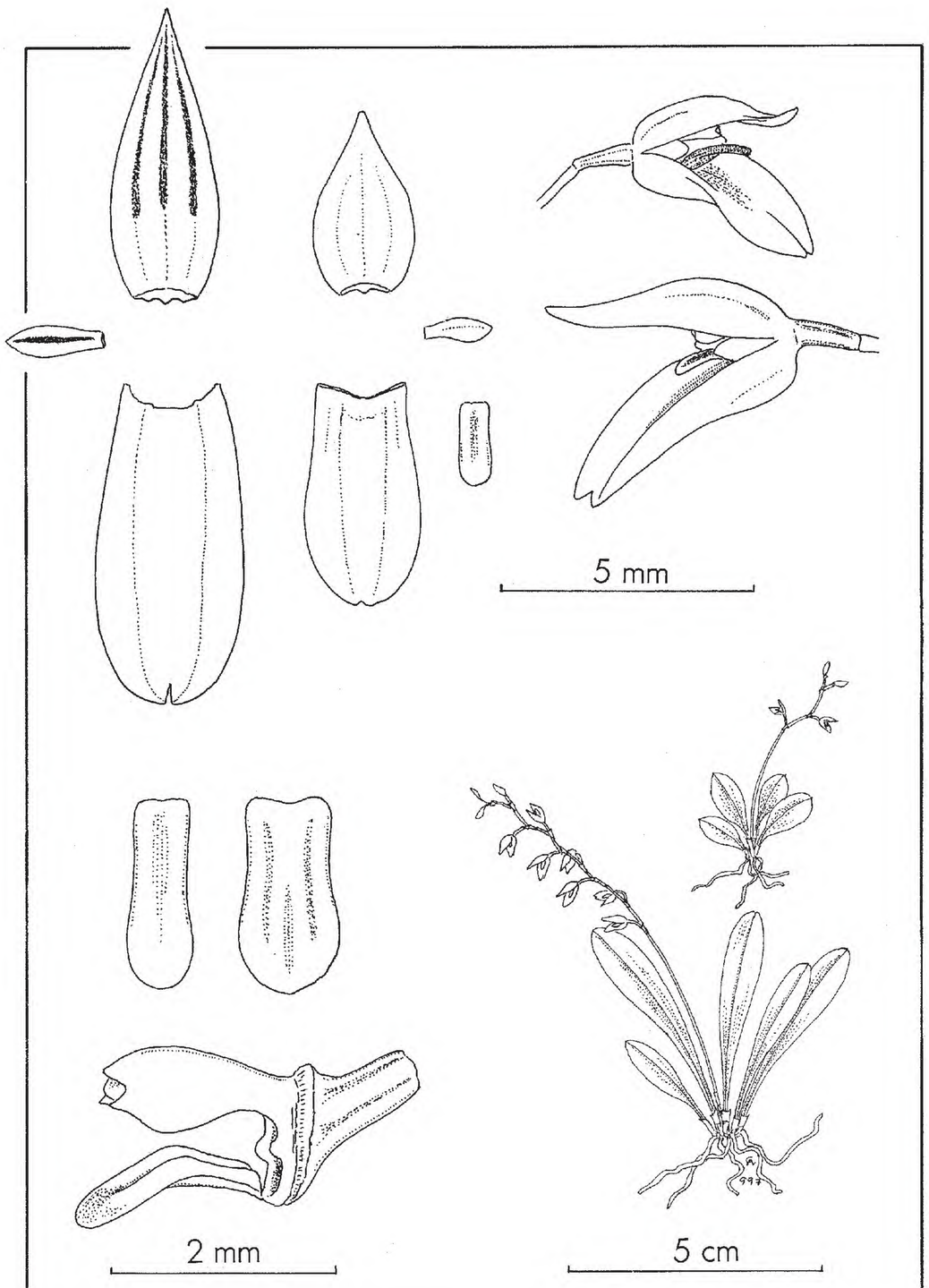


Fig. 13. Specklinia grobyi

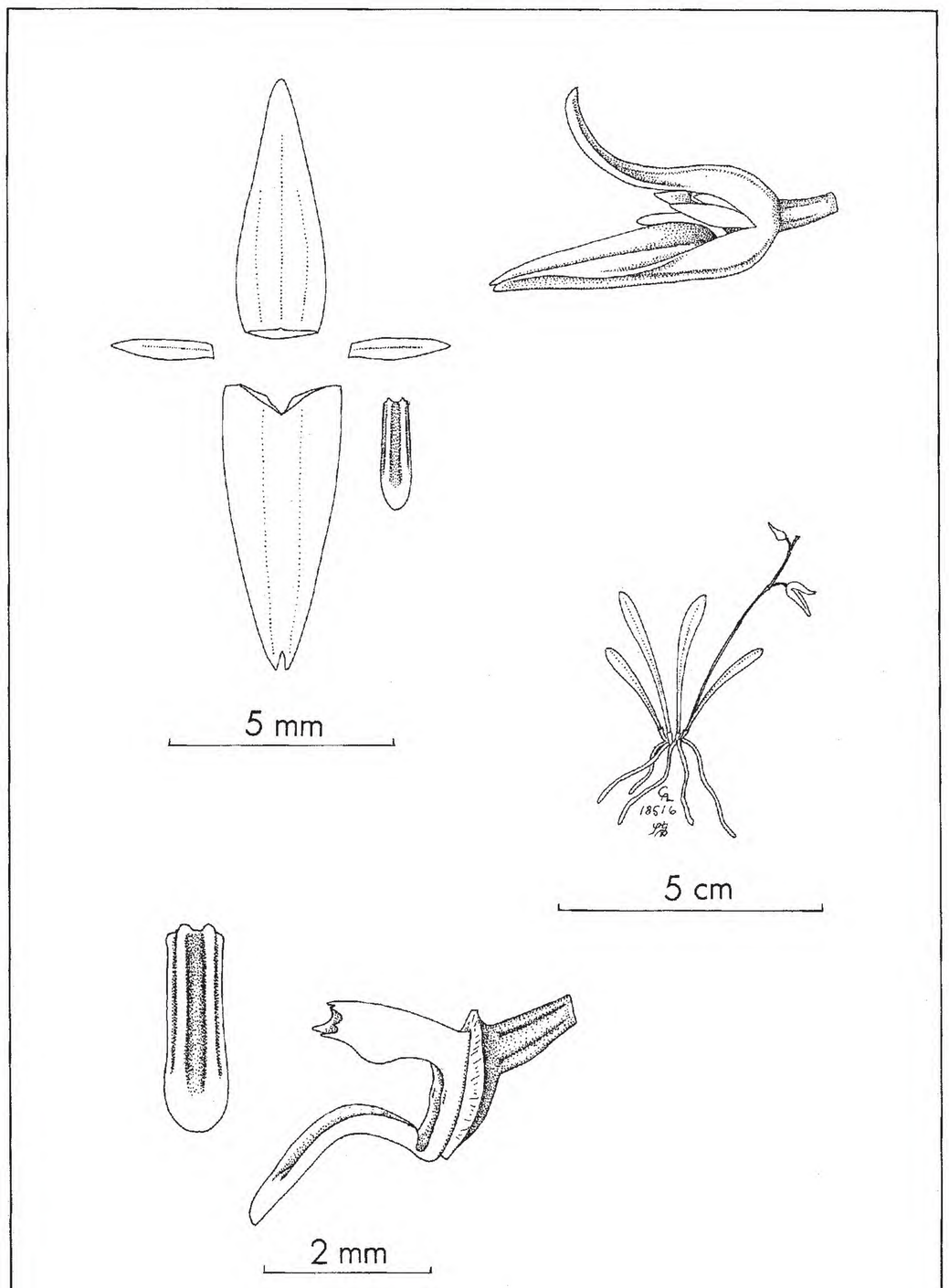


Fig. 14. Specklinia jesupii

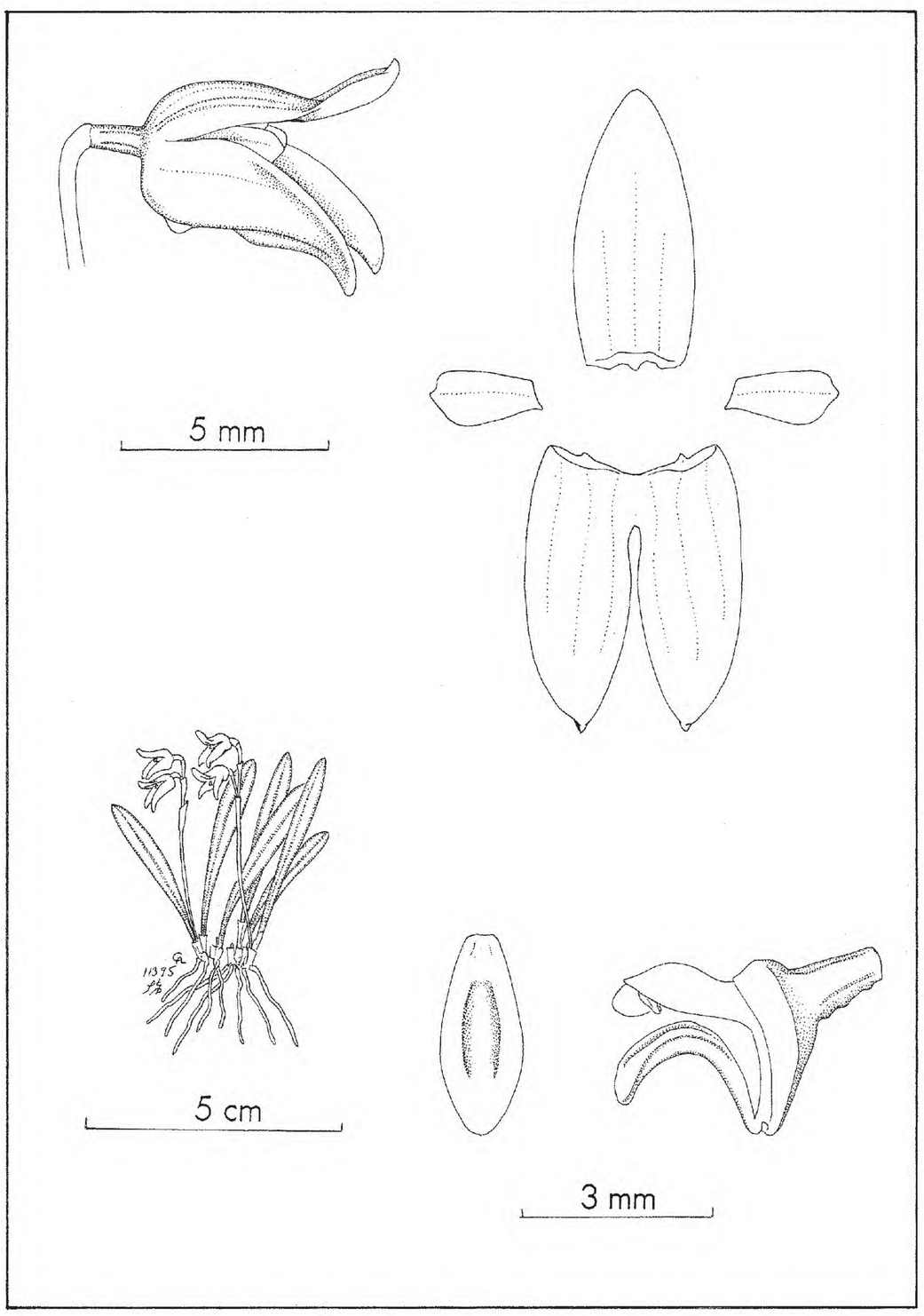


Fig. 15a. Specklinia lanceola

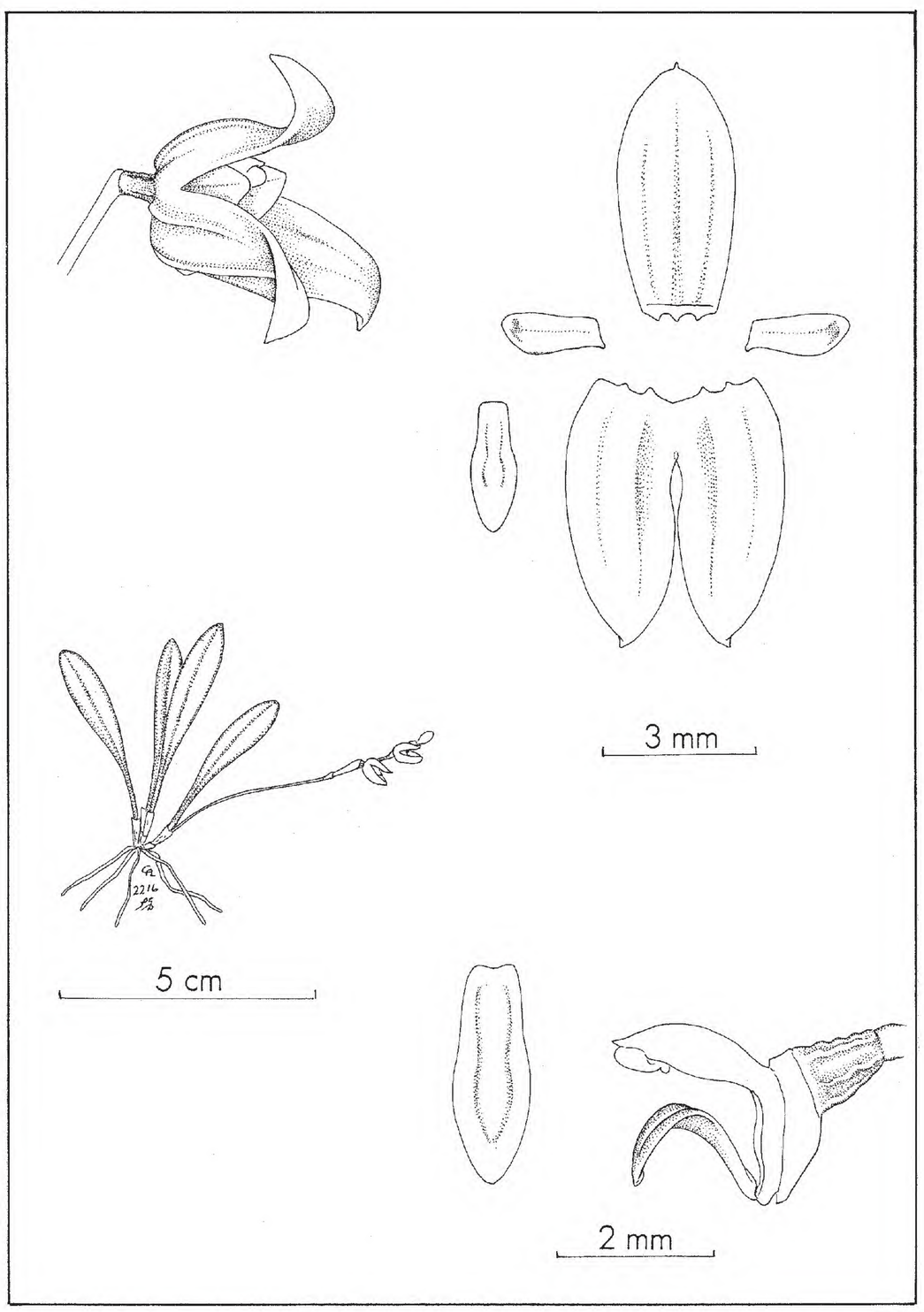


Fig. 15b. Specklinia lanceola

Specklinia lateritia

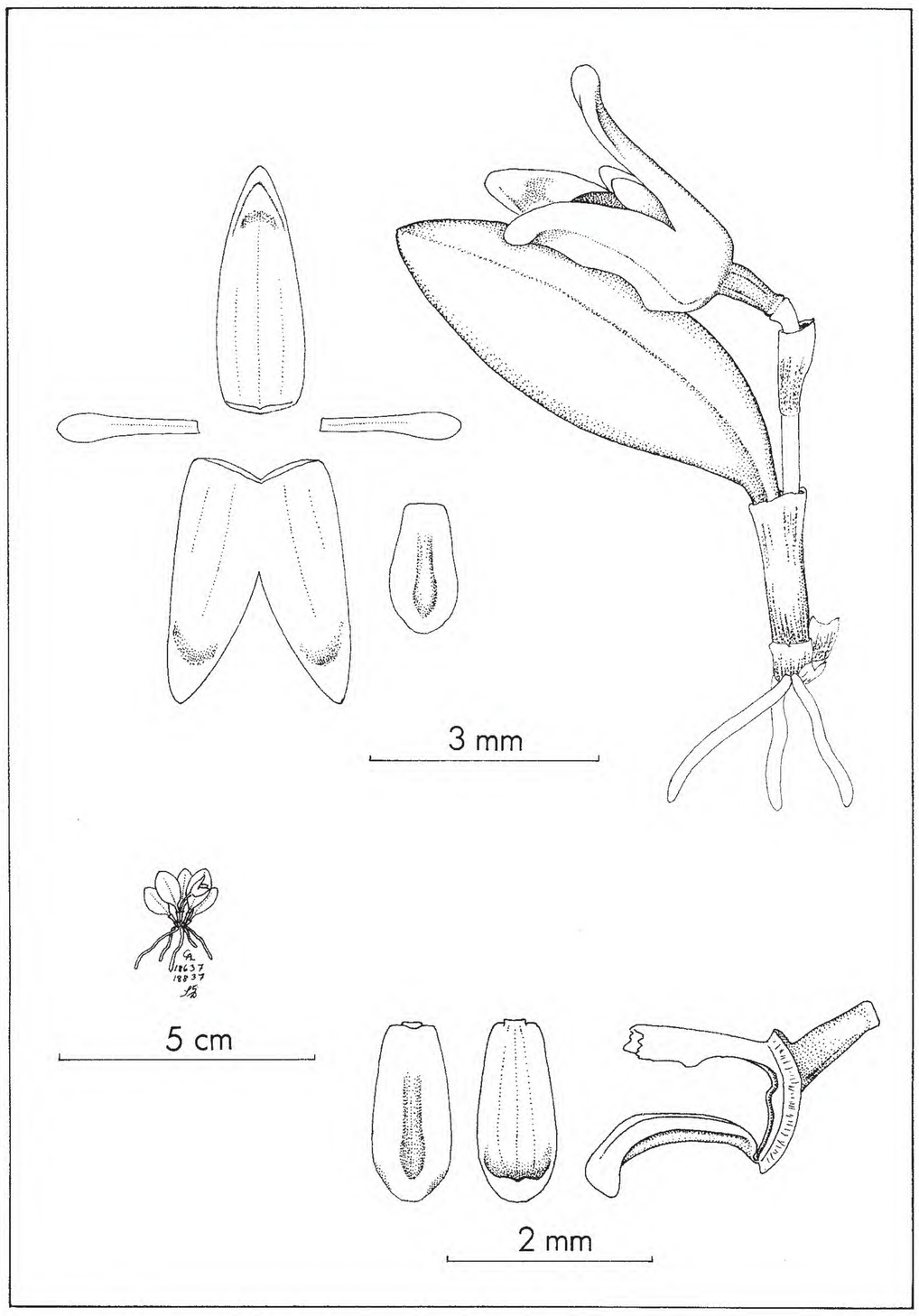


Fig. 16. Specklinia lichenicola

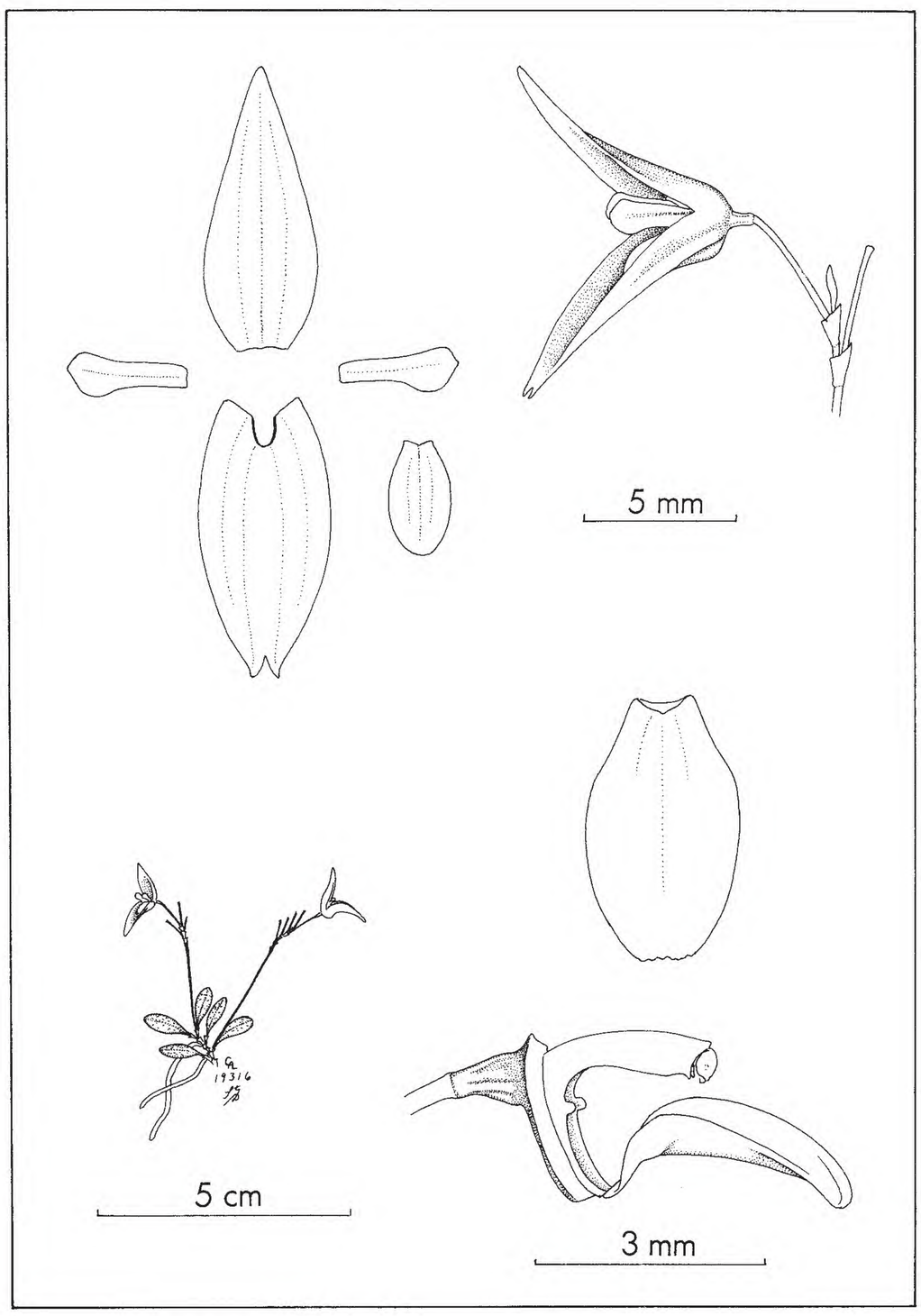


Fig. 17. Specklinia luis-diegoi

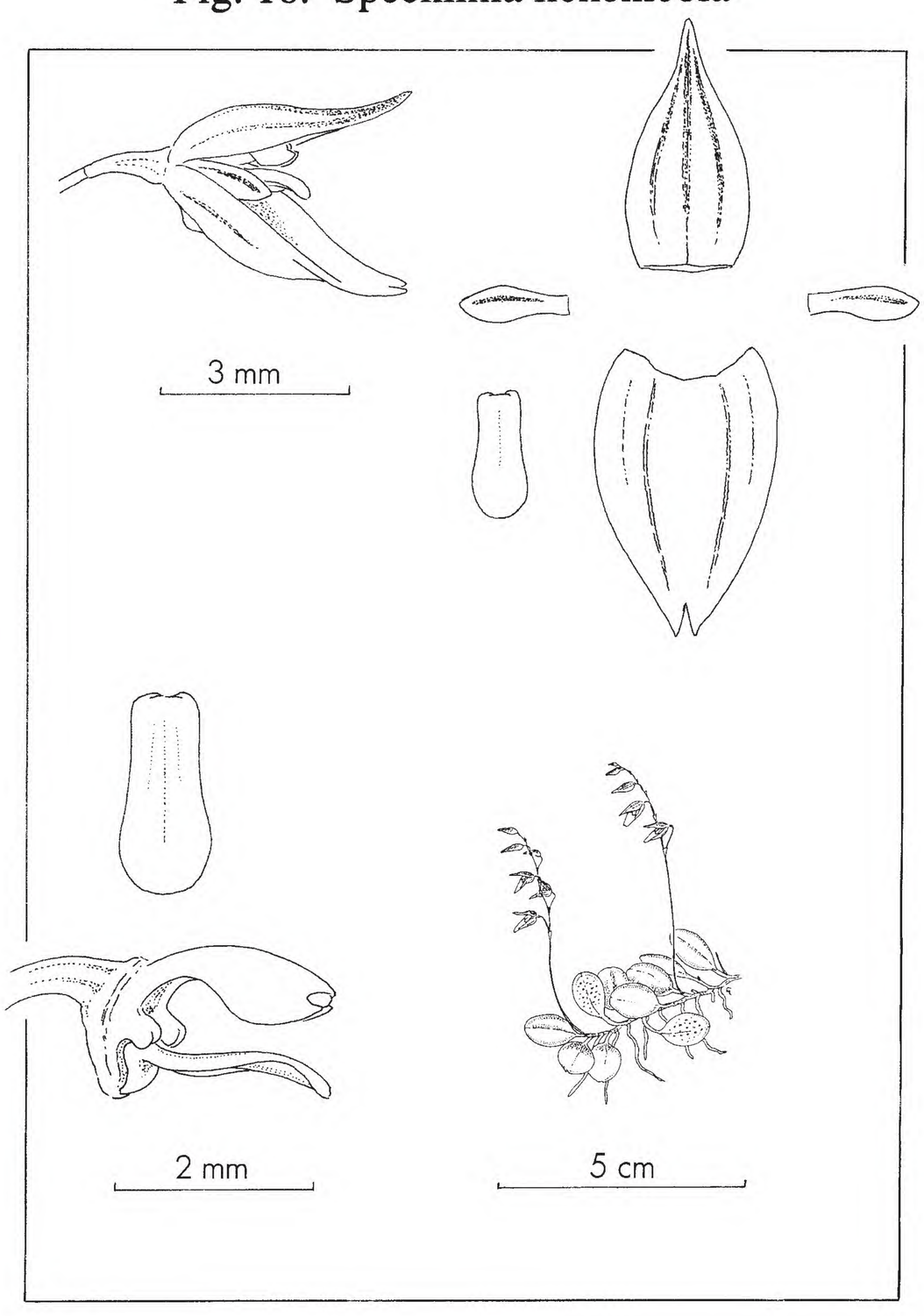


Fig. 18. Specklinia microphylla

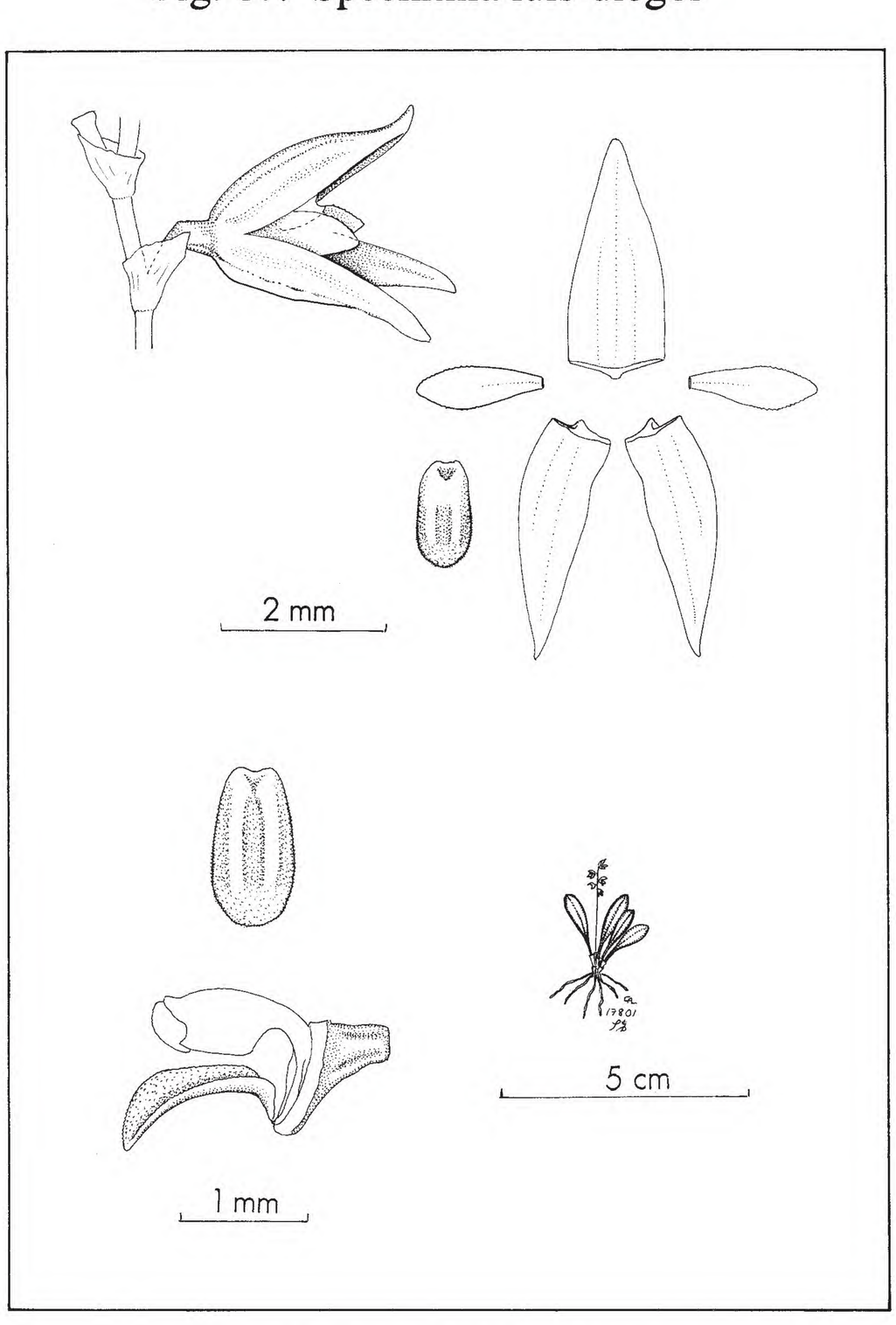


Fig. 19. Specklinia minuta

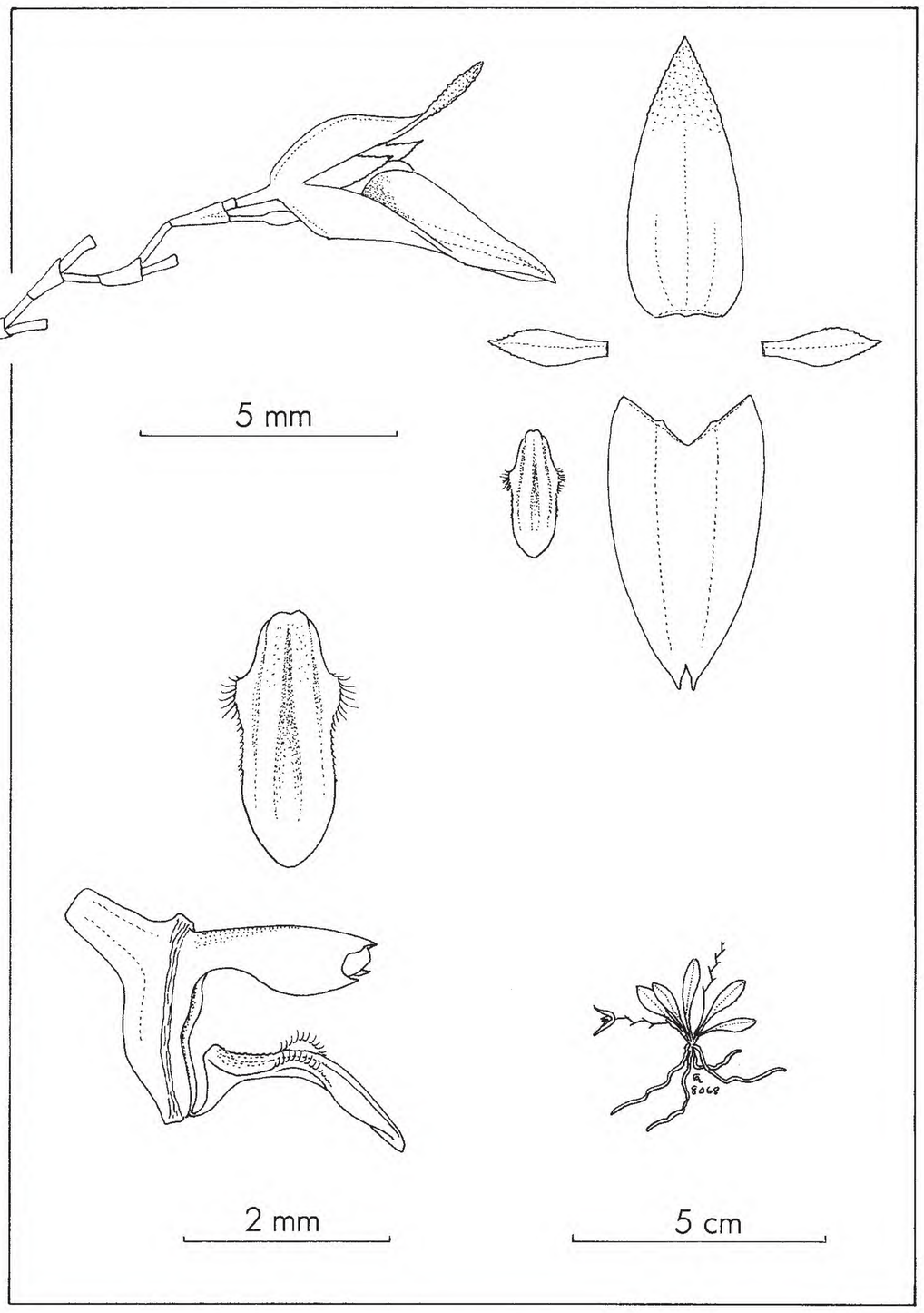


Fig. 20. Specklinia mitchellii

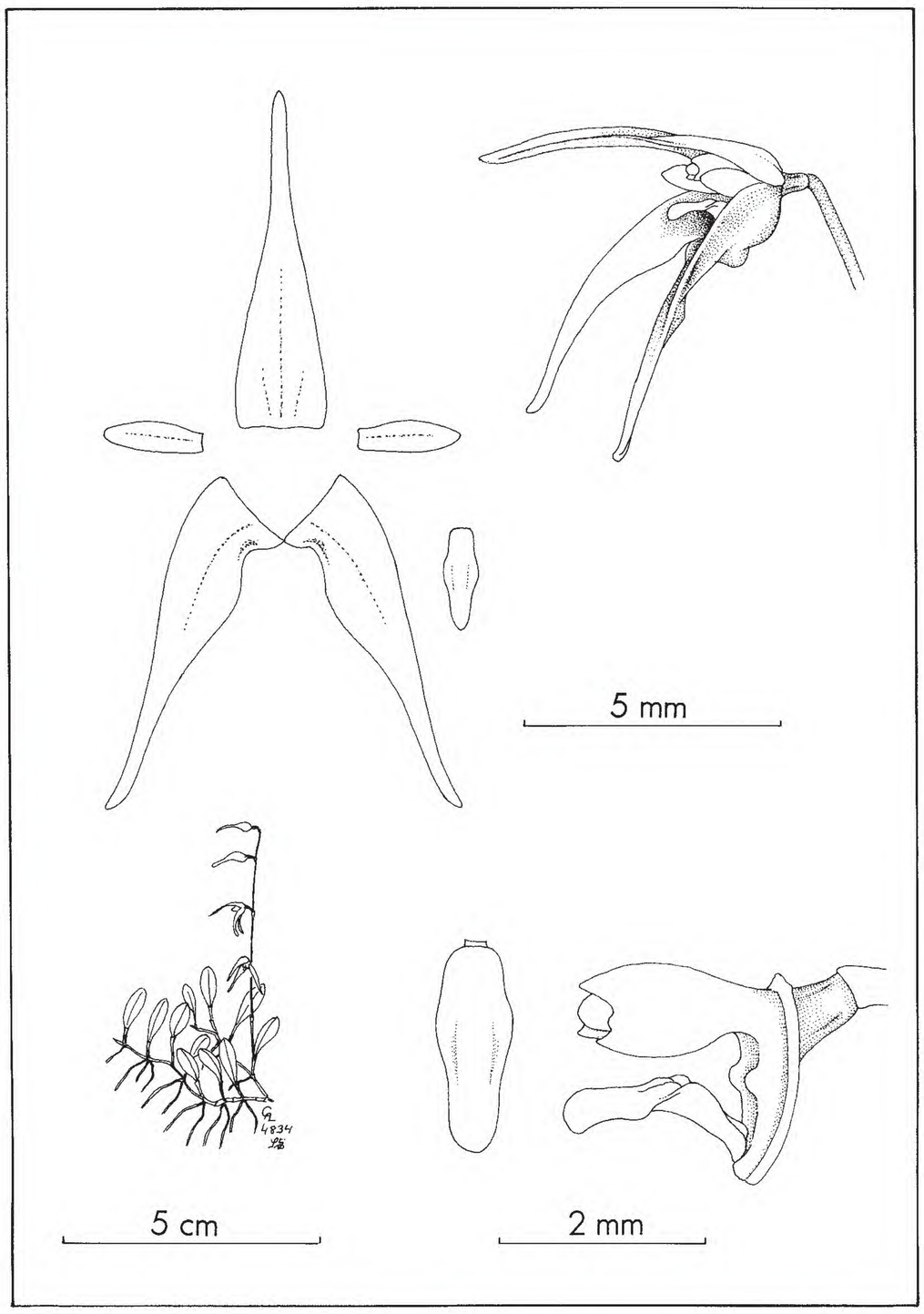


Fig. 21. Specklinia morganii

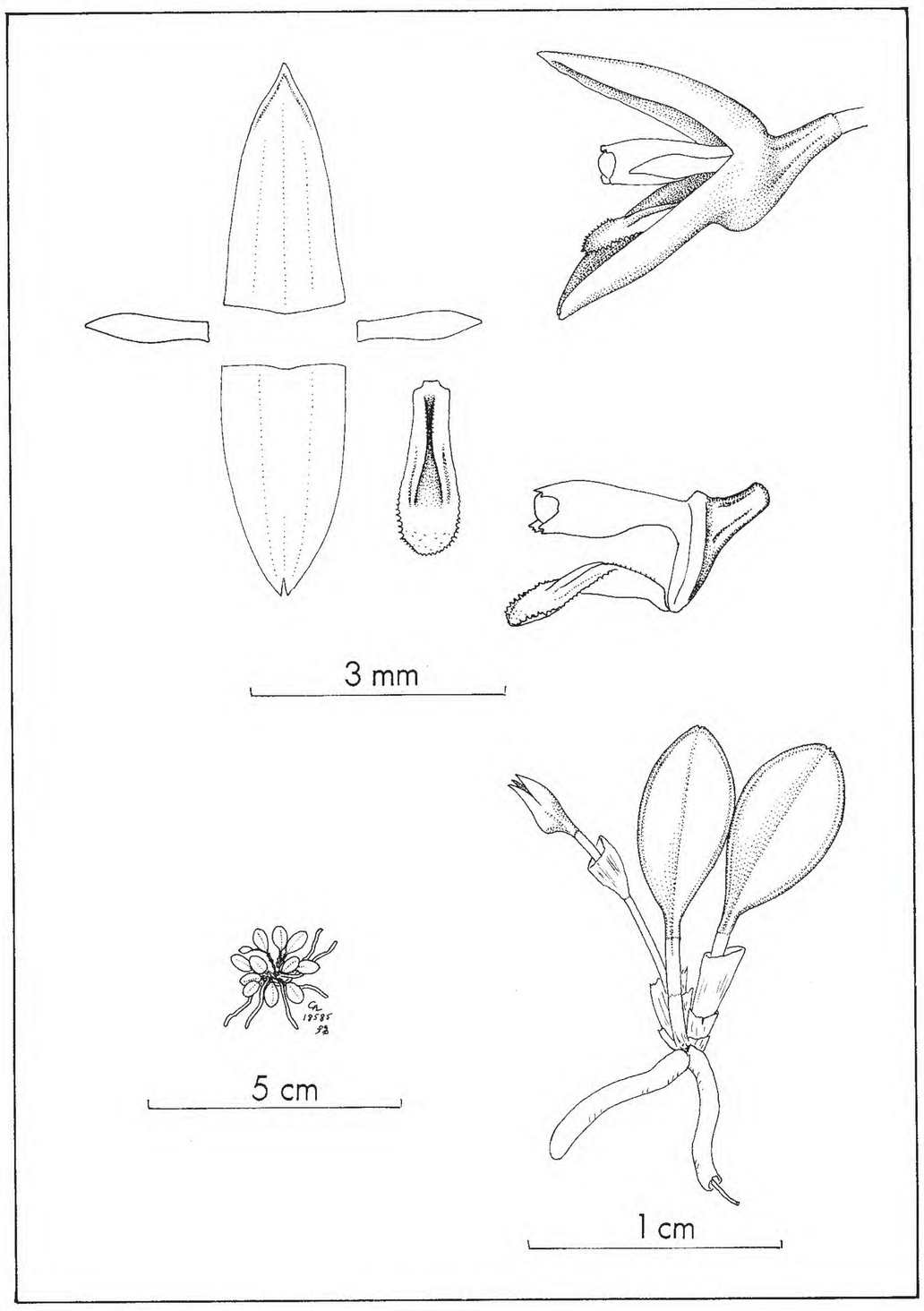


Fig. 22. Specklinia mornicola

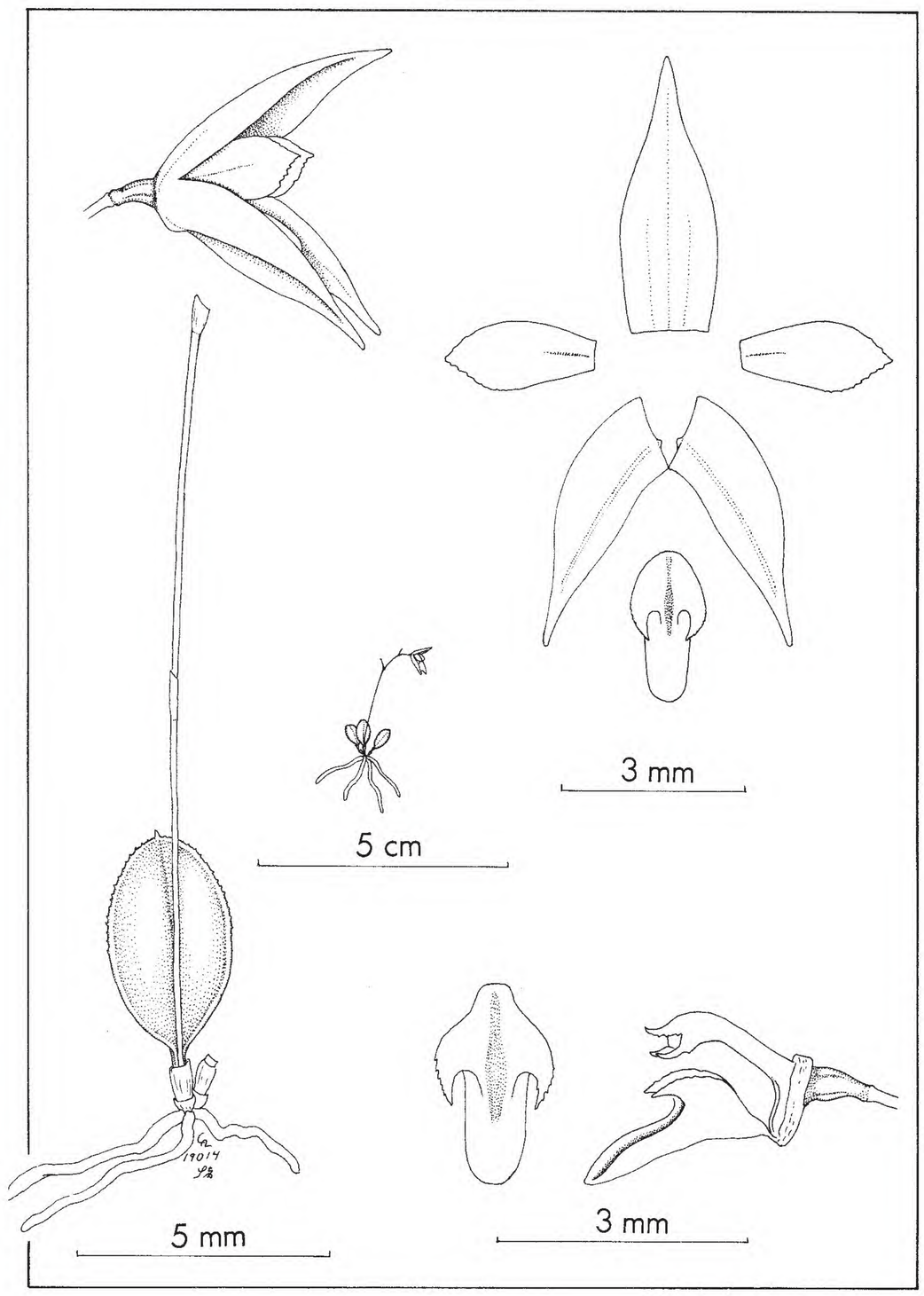


Fig. 23. Specklinia mucronata

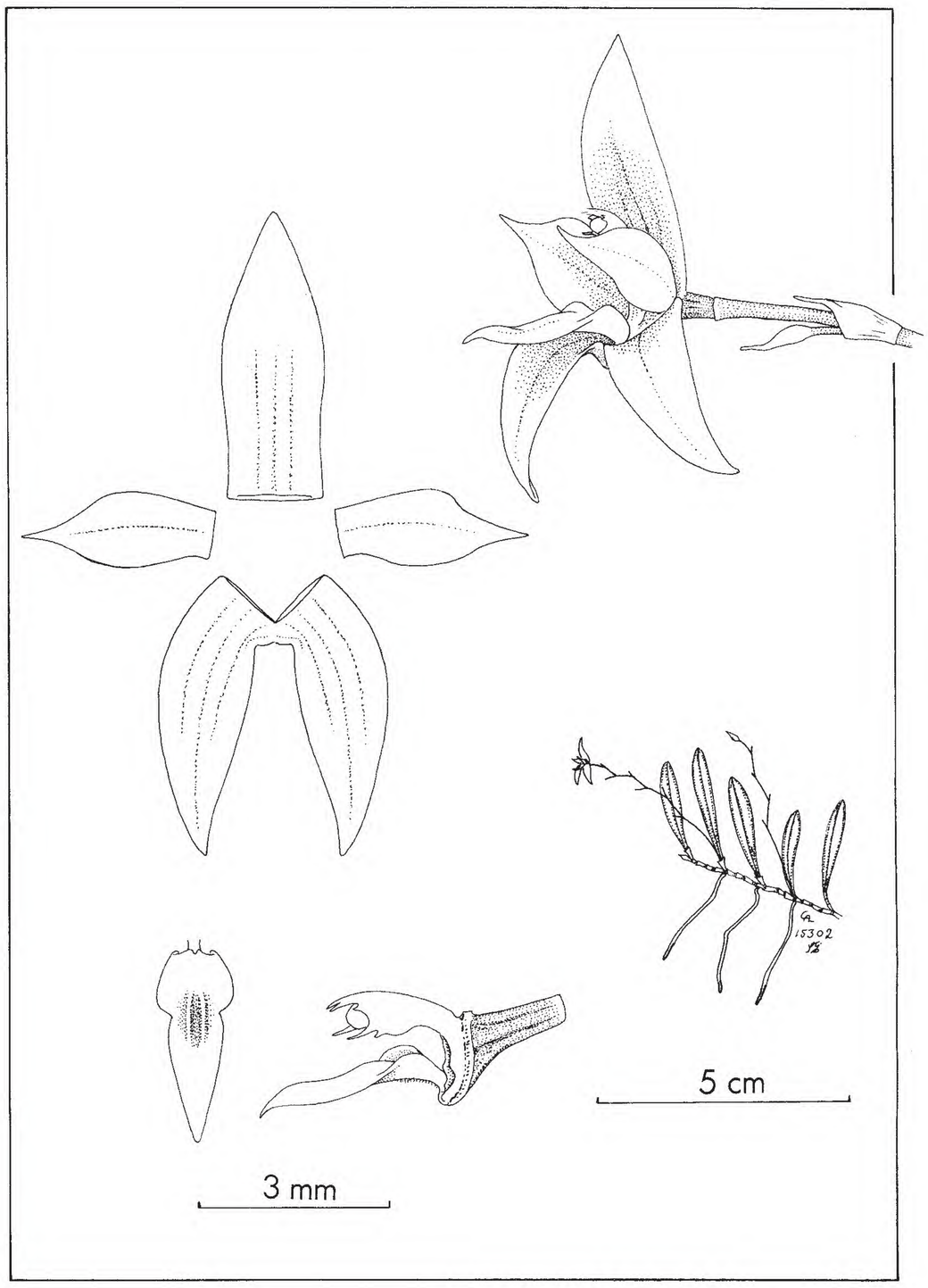


Fig. 24. Specklinia napintzae

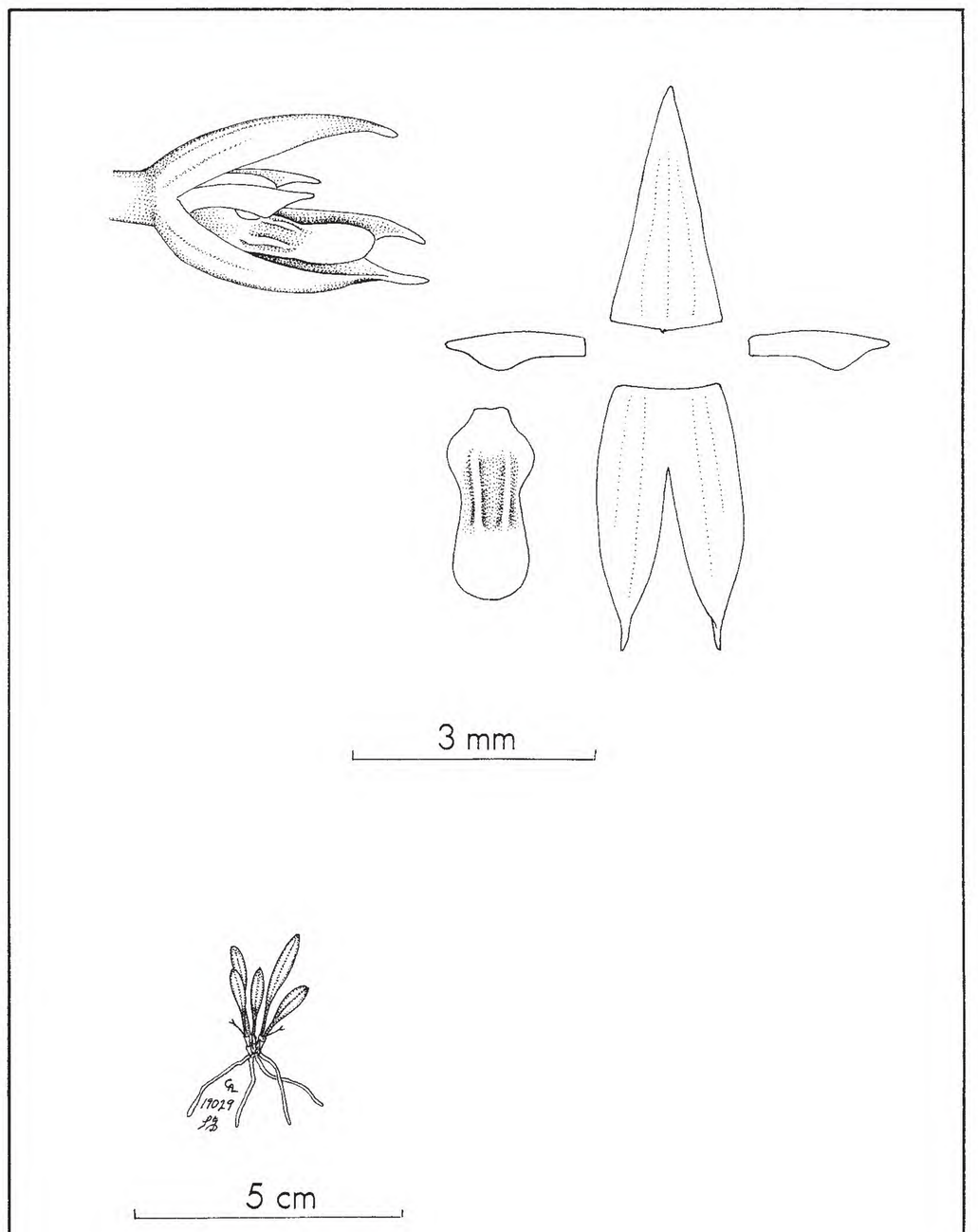


Fig. 25. Specklinia obliquipetala

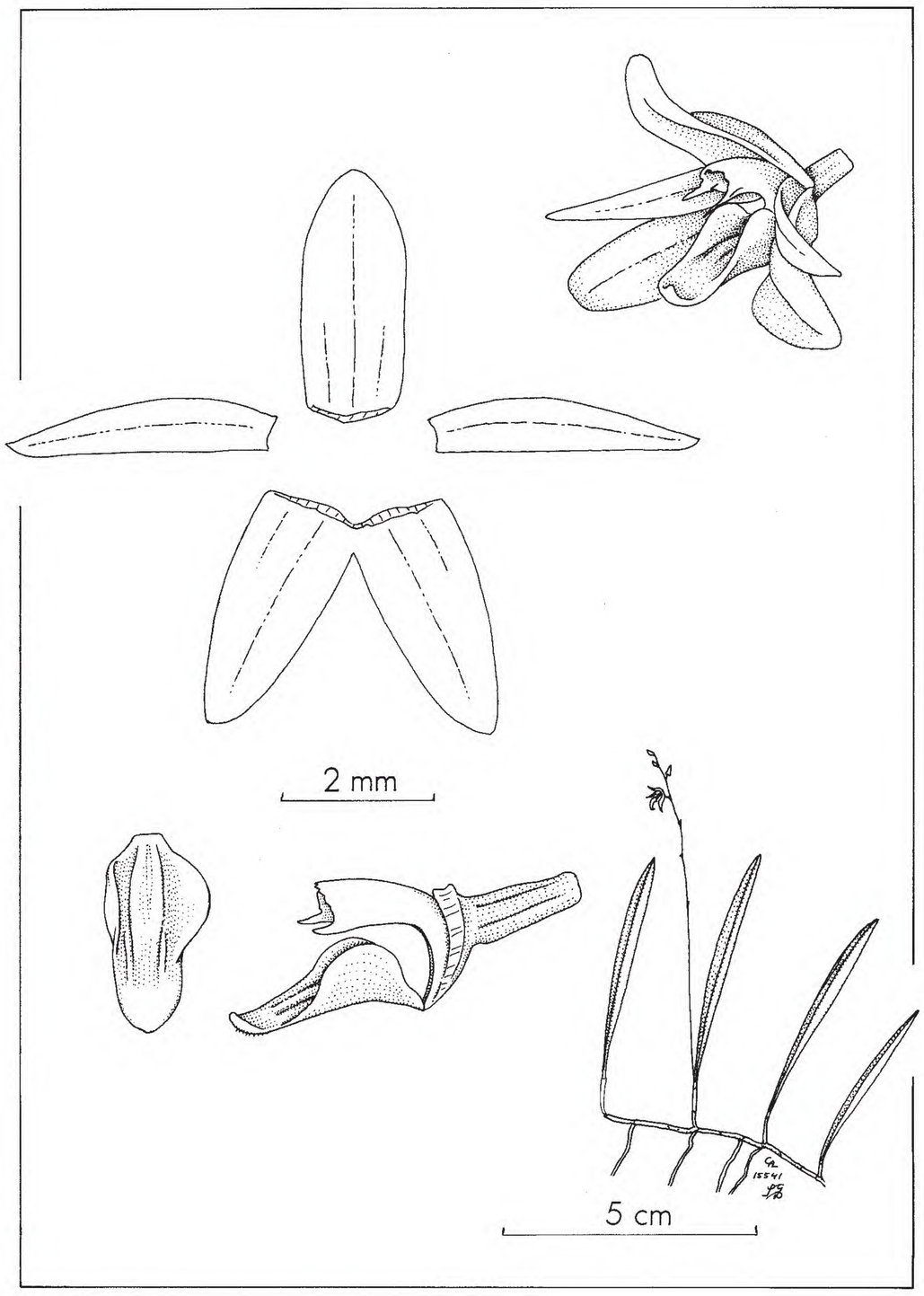


Fig. 26. Specklinia ordinata

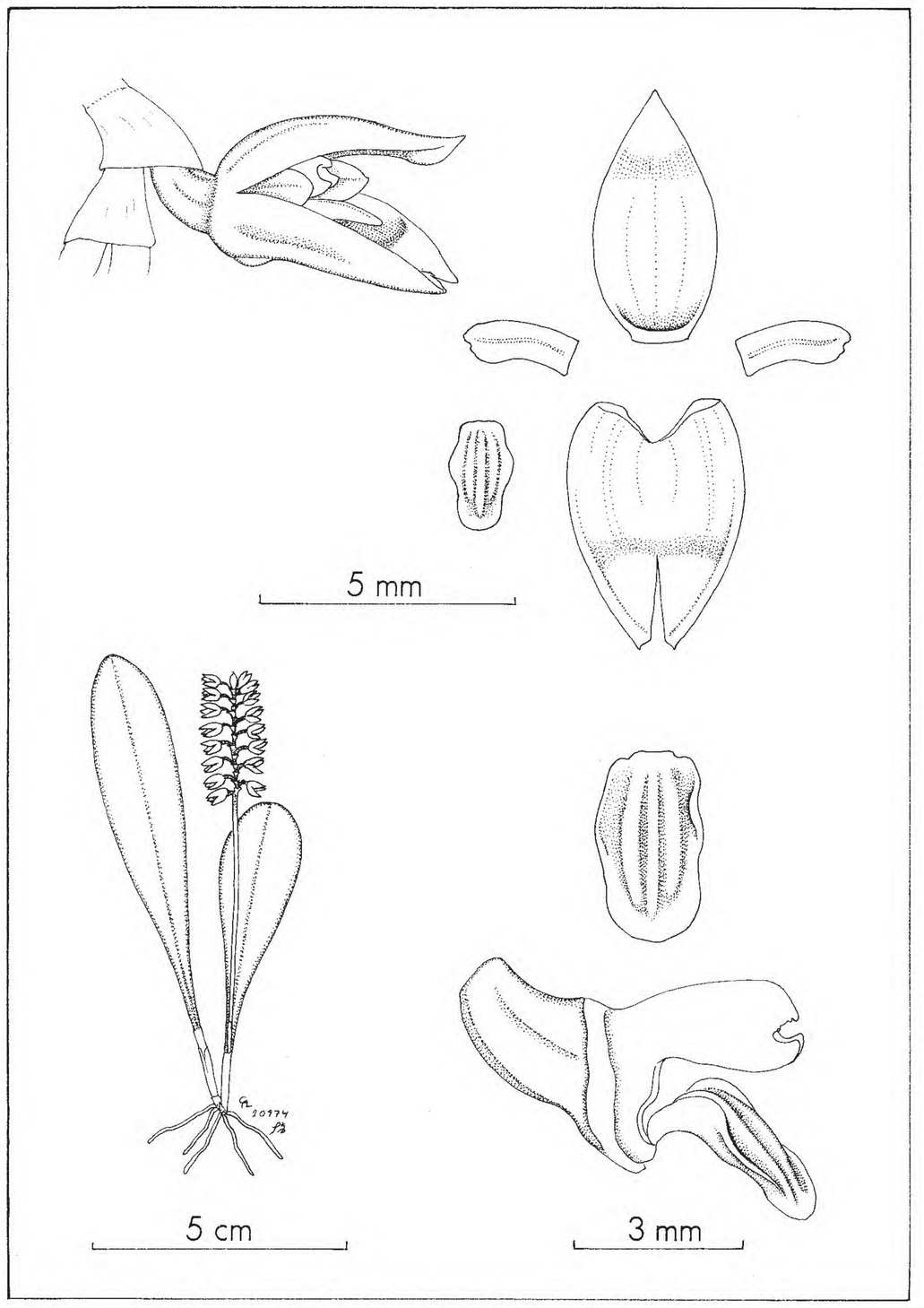


Fig. 27. Specklinia pectinifera

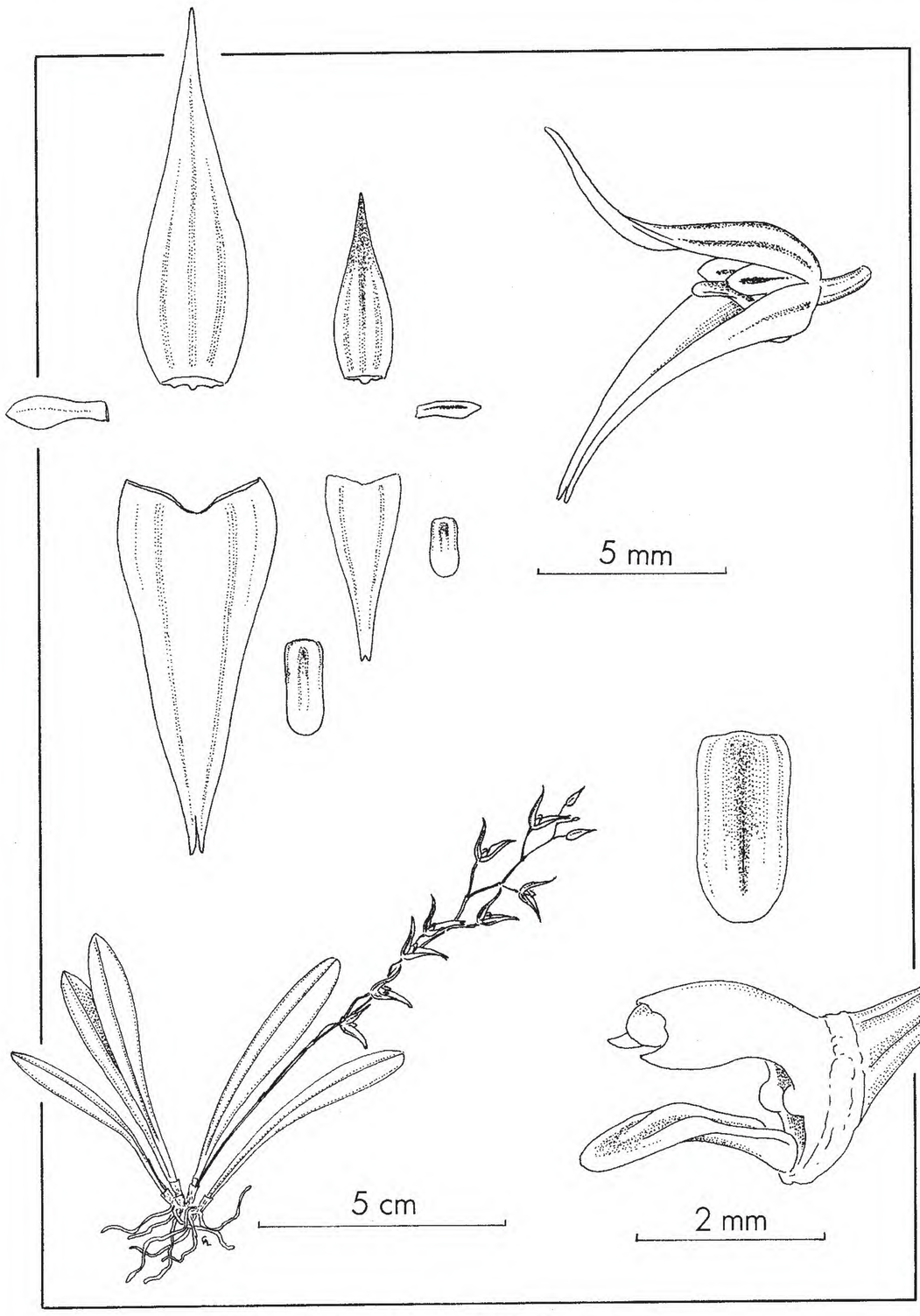


Fig. 28. Specklinia picta

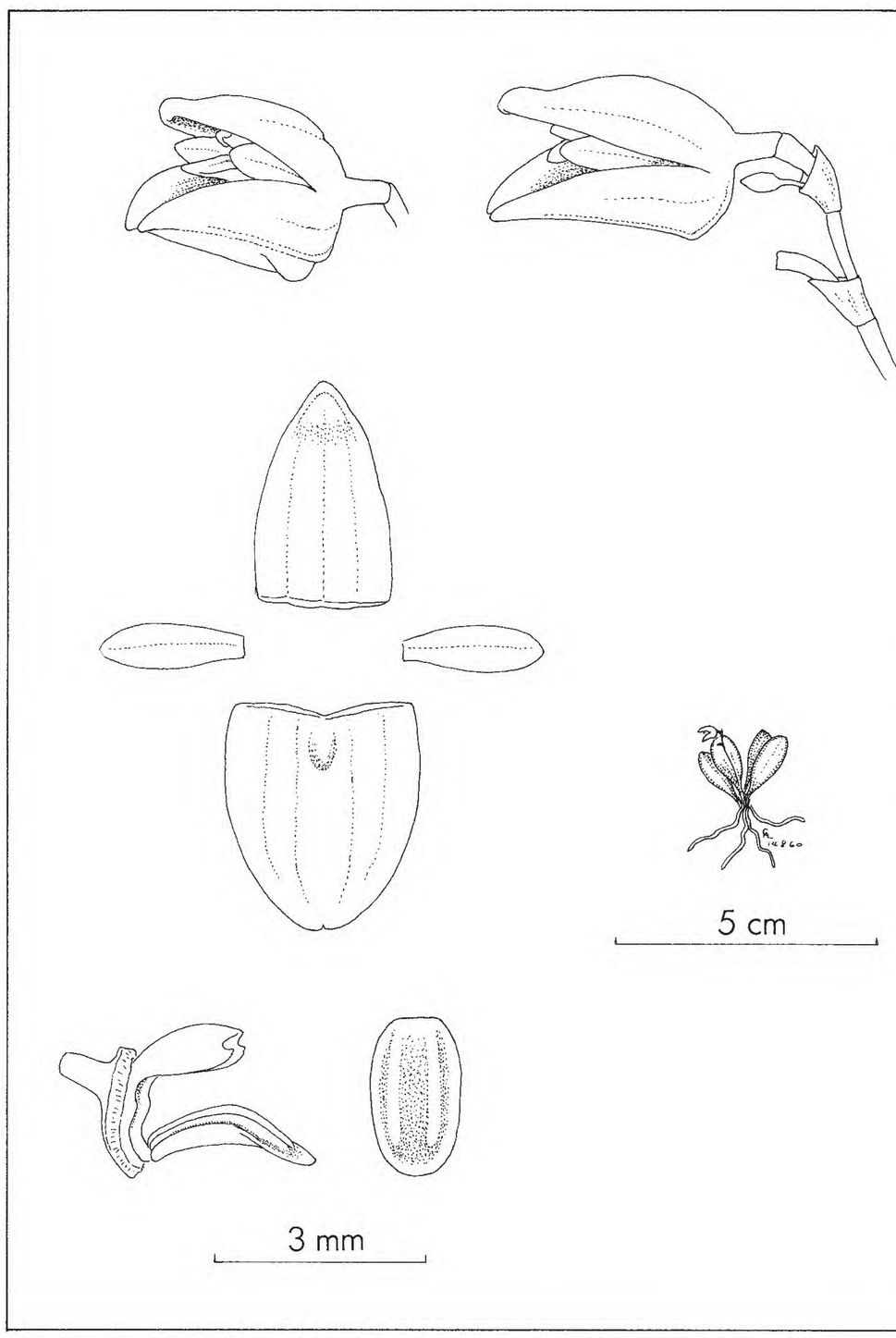


Fig. 29. Specklinia pisinna

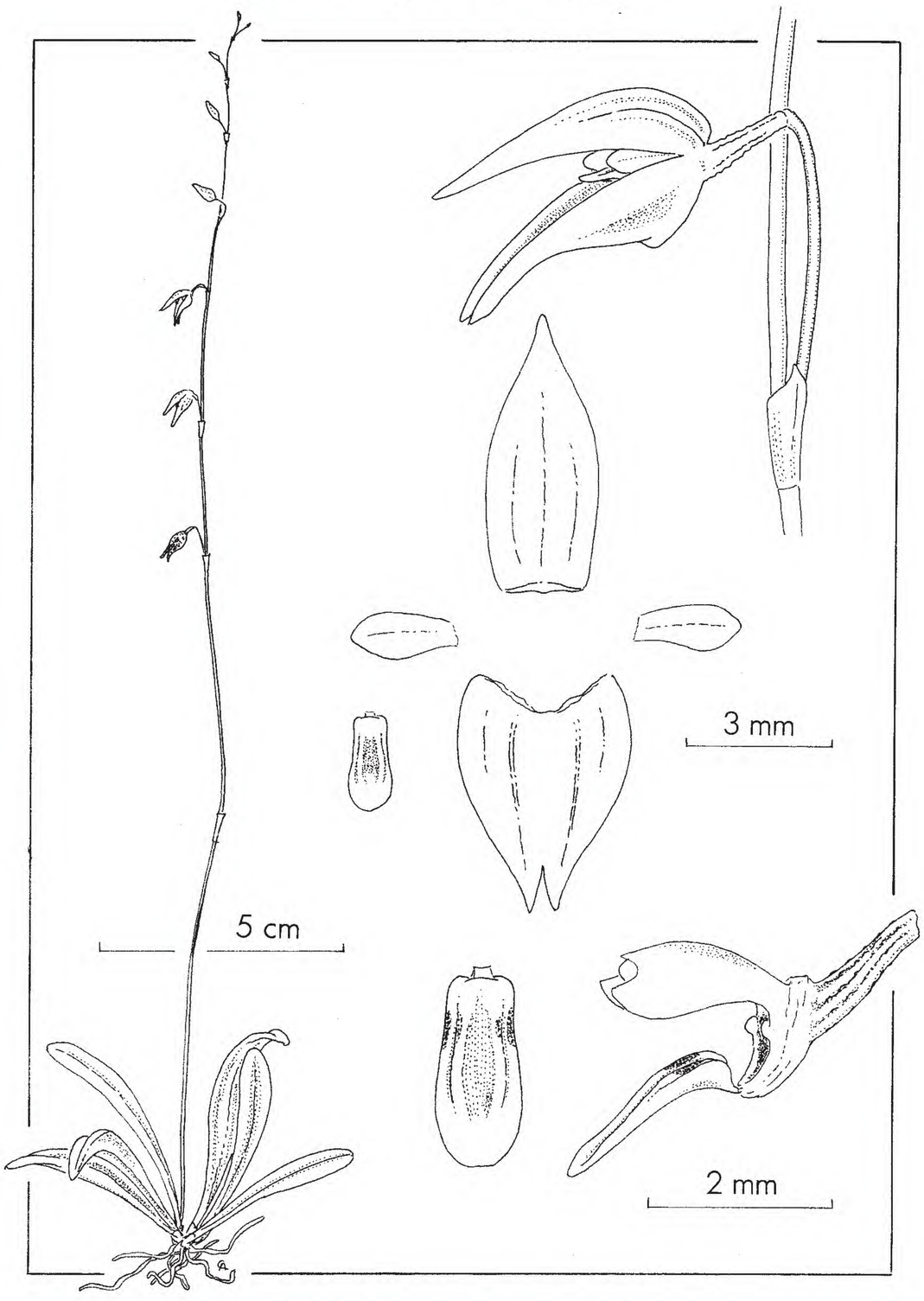


Fig. 30. Specklinia producta

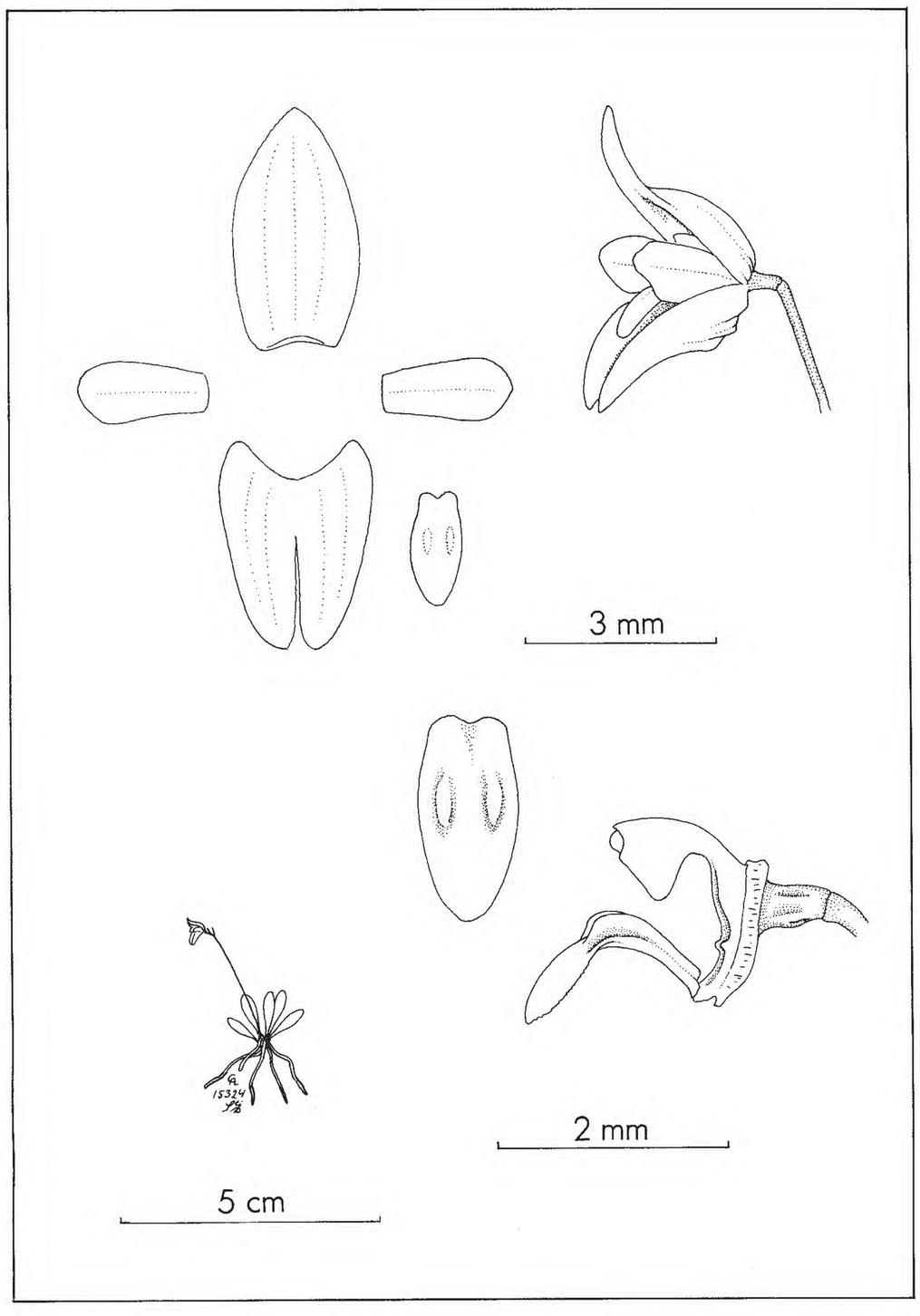


Fig. 31. Specklinia recula

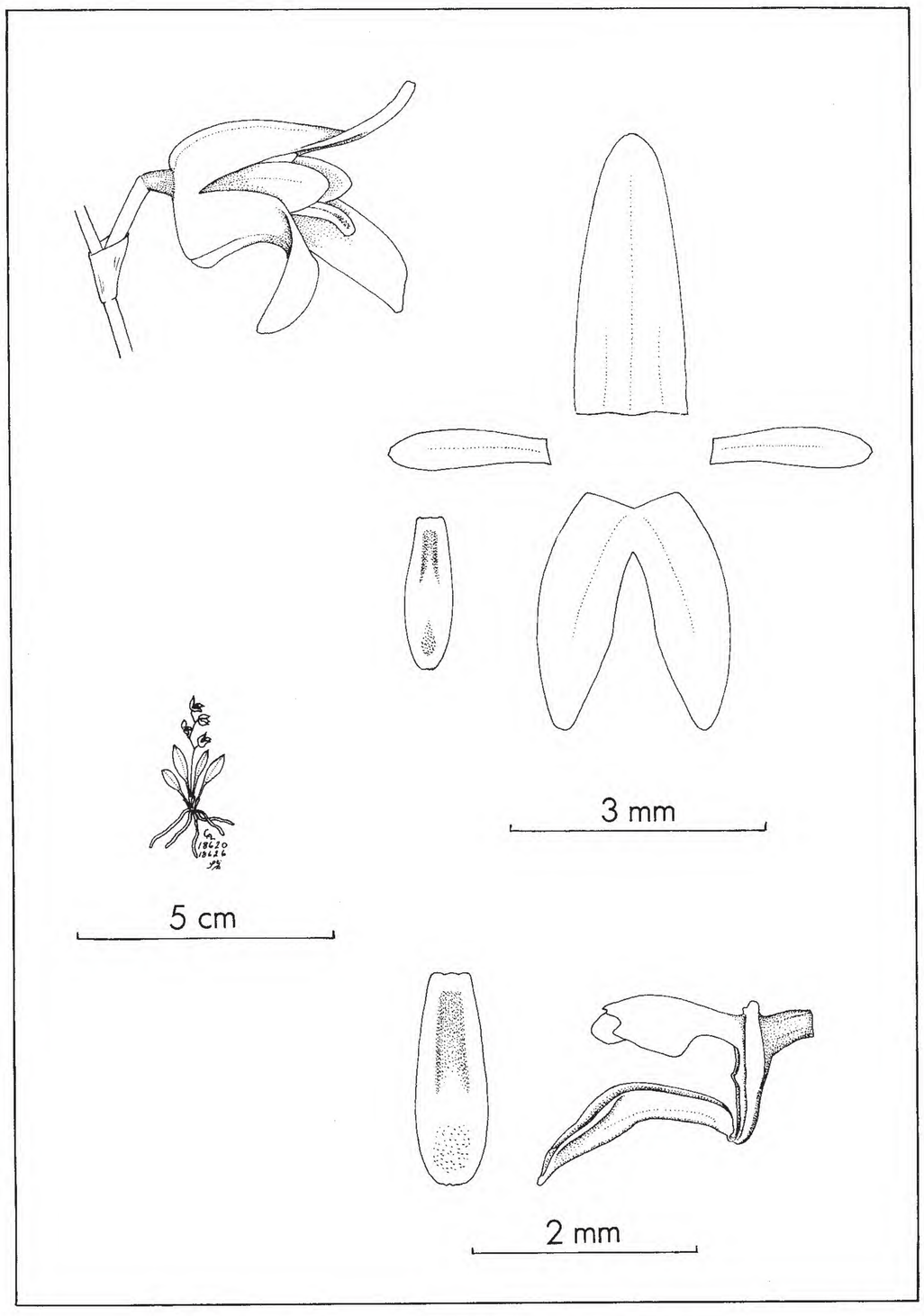


Fig. 32a. Specklinia schaferi

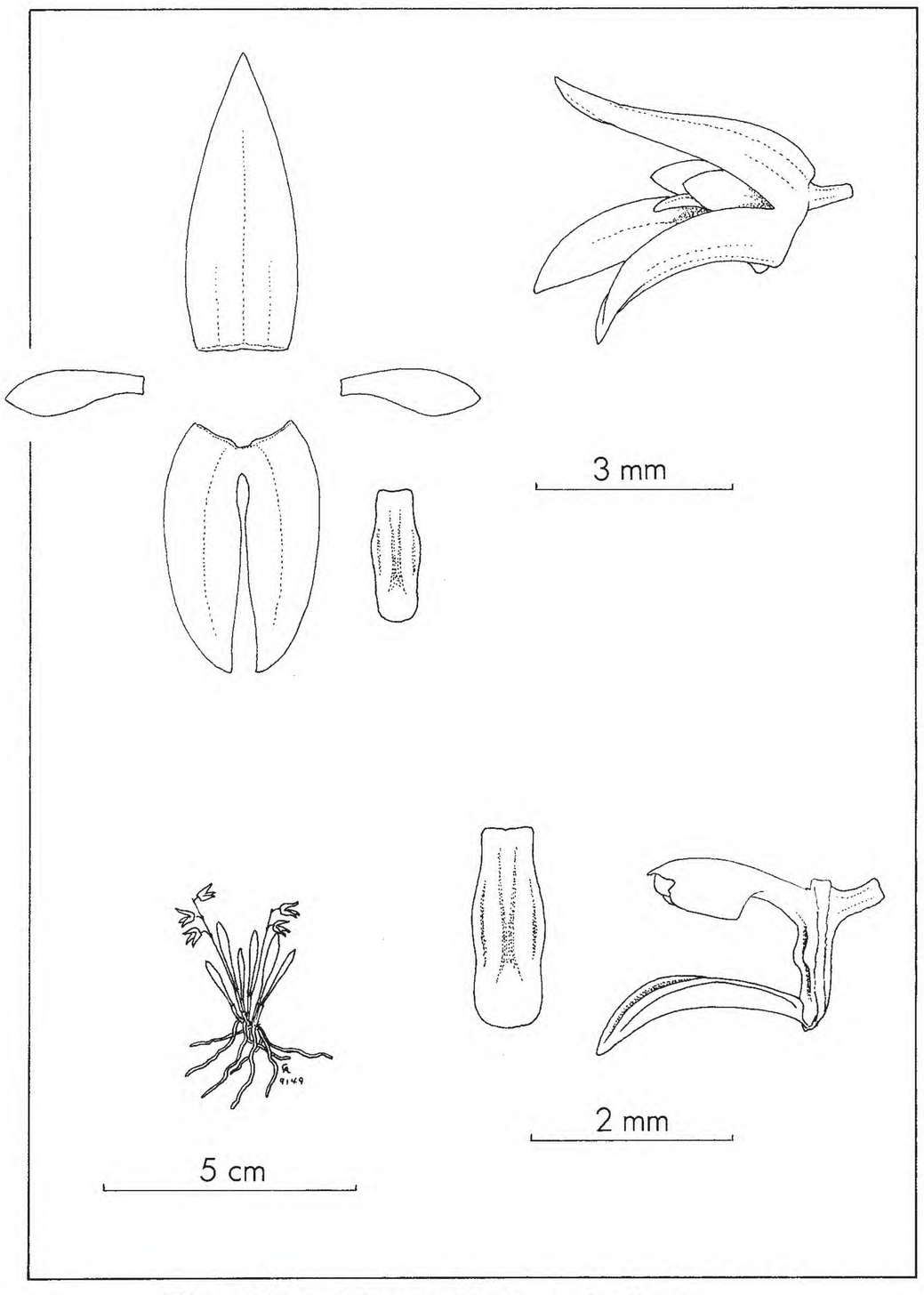


Fig. 32b. Specklinia schaferi
Specklinia haitiensis

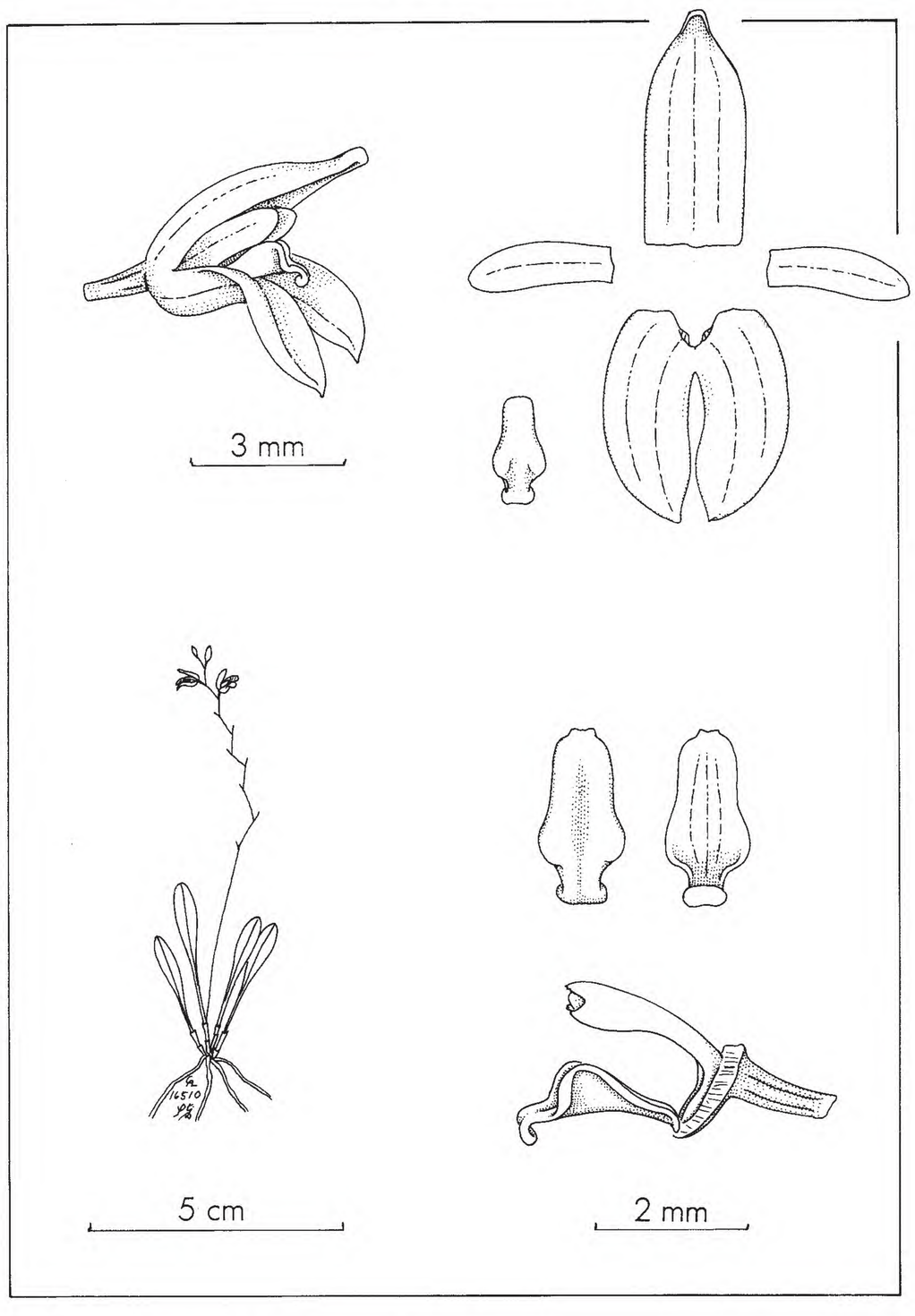


Fig. 33. Specklinia segregatifolia

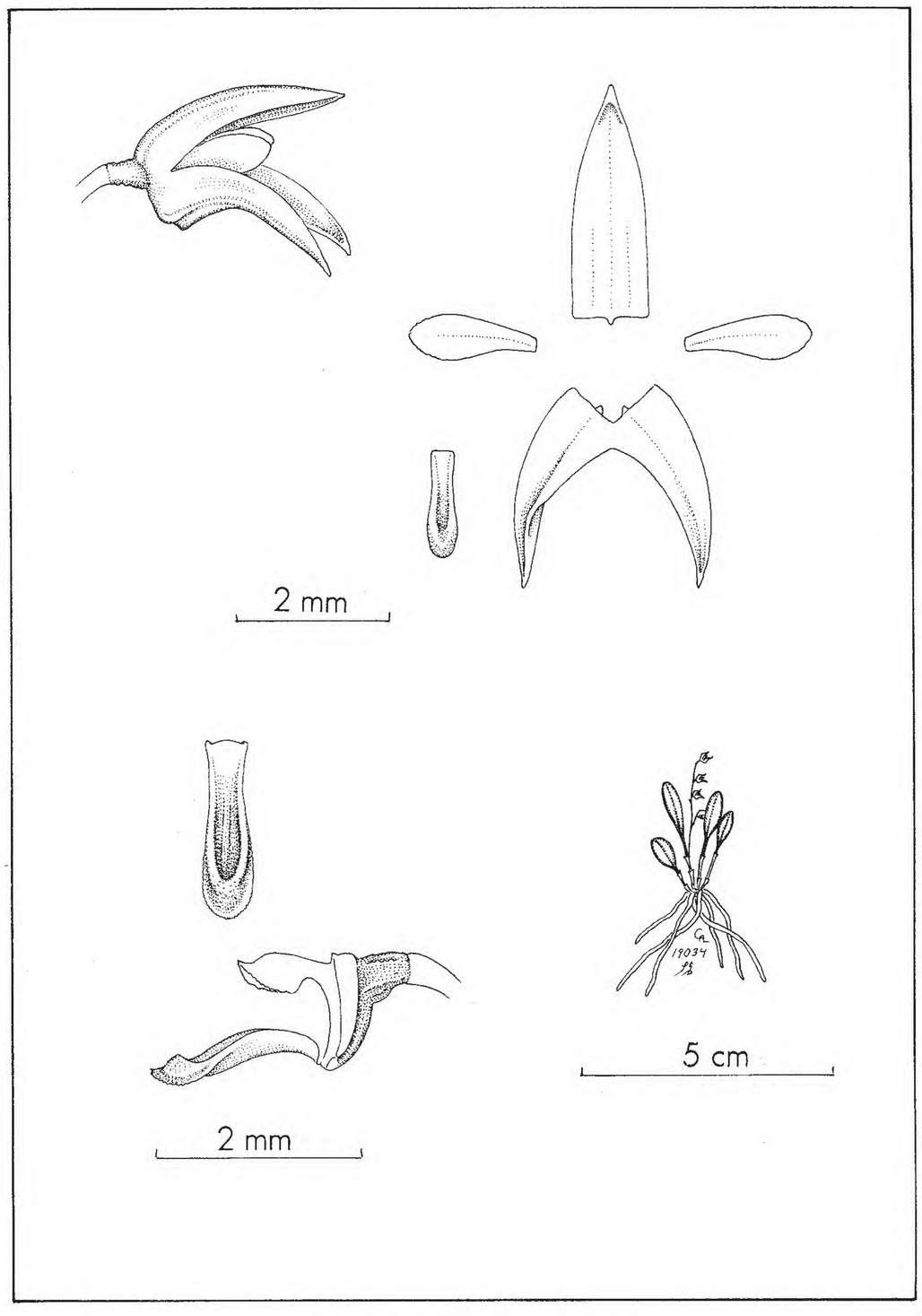


Fig. 34. Specklinia simpliciflora

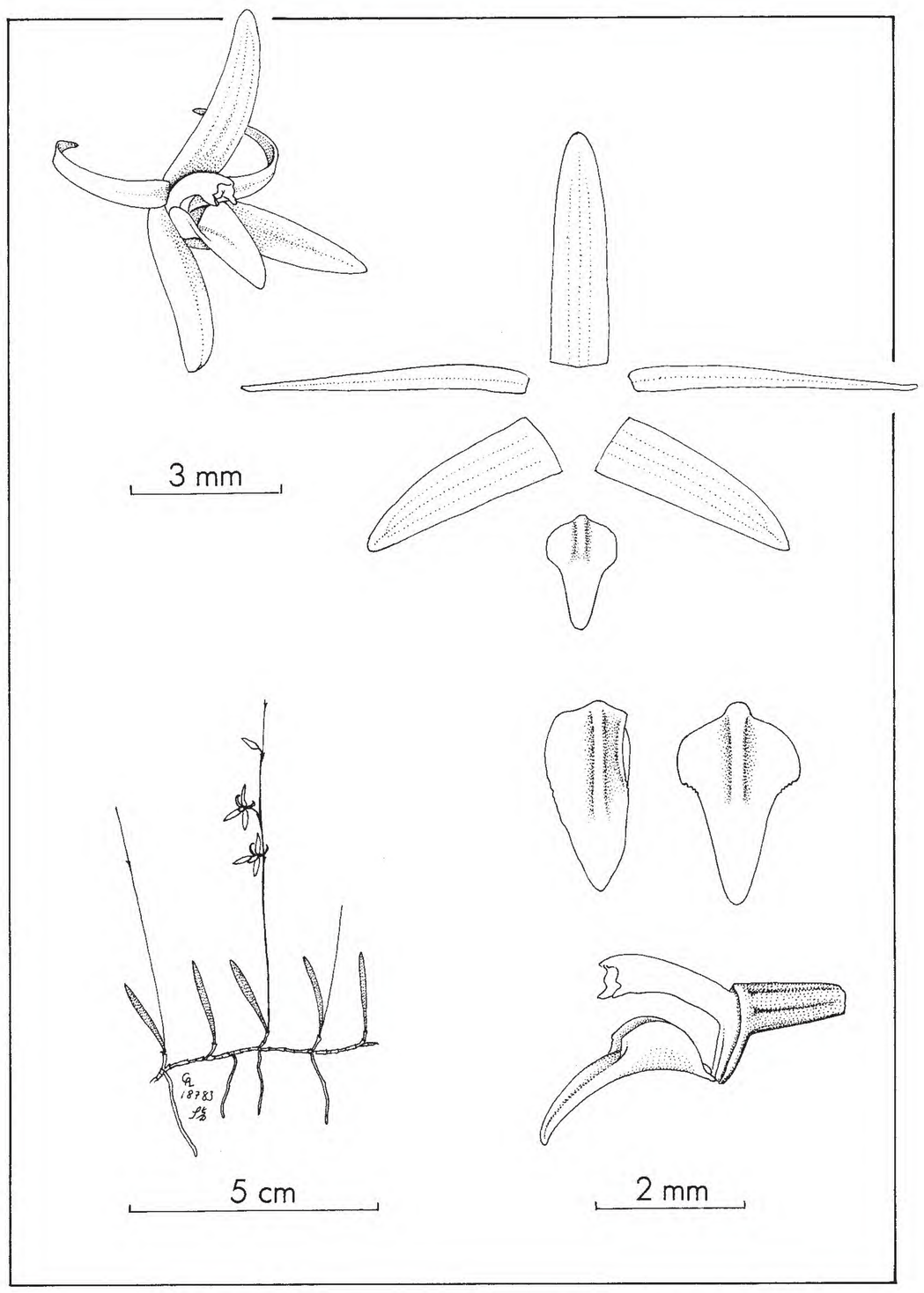


Fig. 35a. Specklinia spiculifera

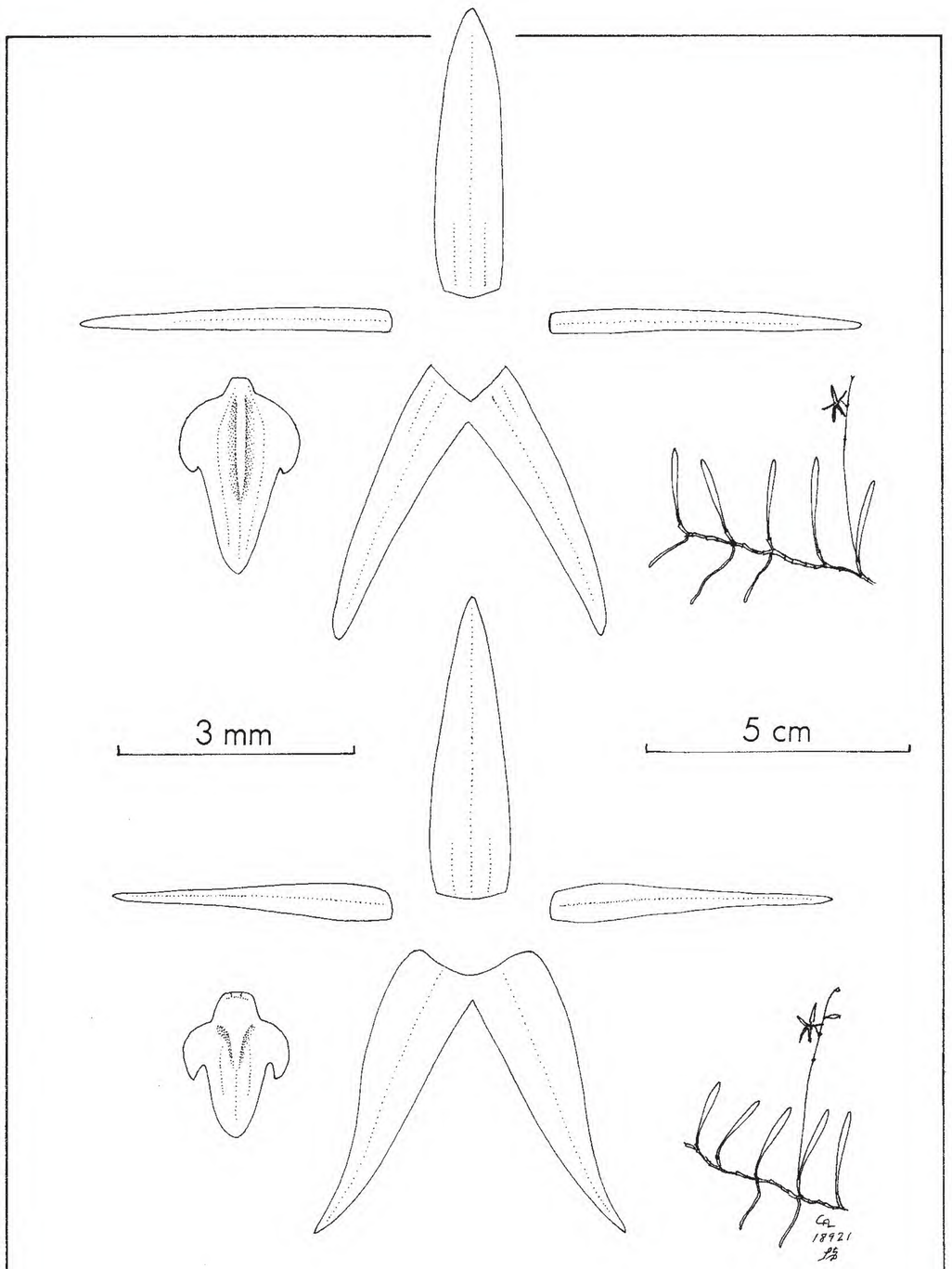


Fig. 35b. Specklinia spiculifera, *above*
Pleurothallis acutissima, *below*

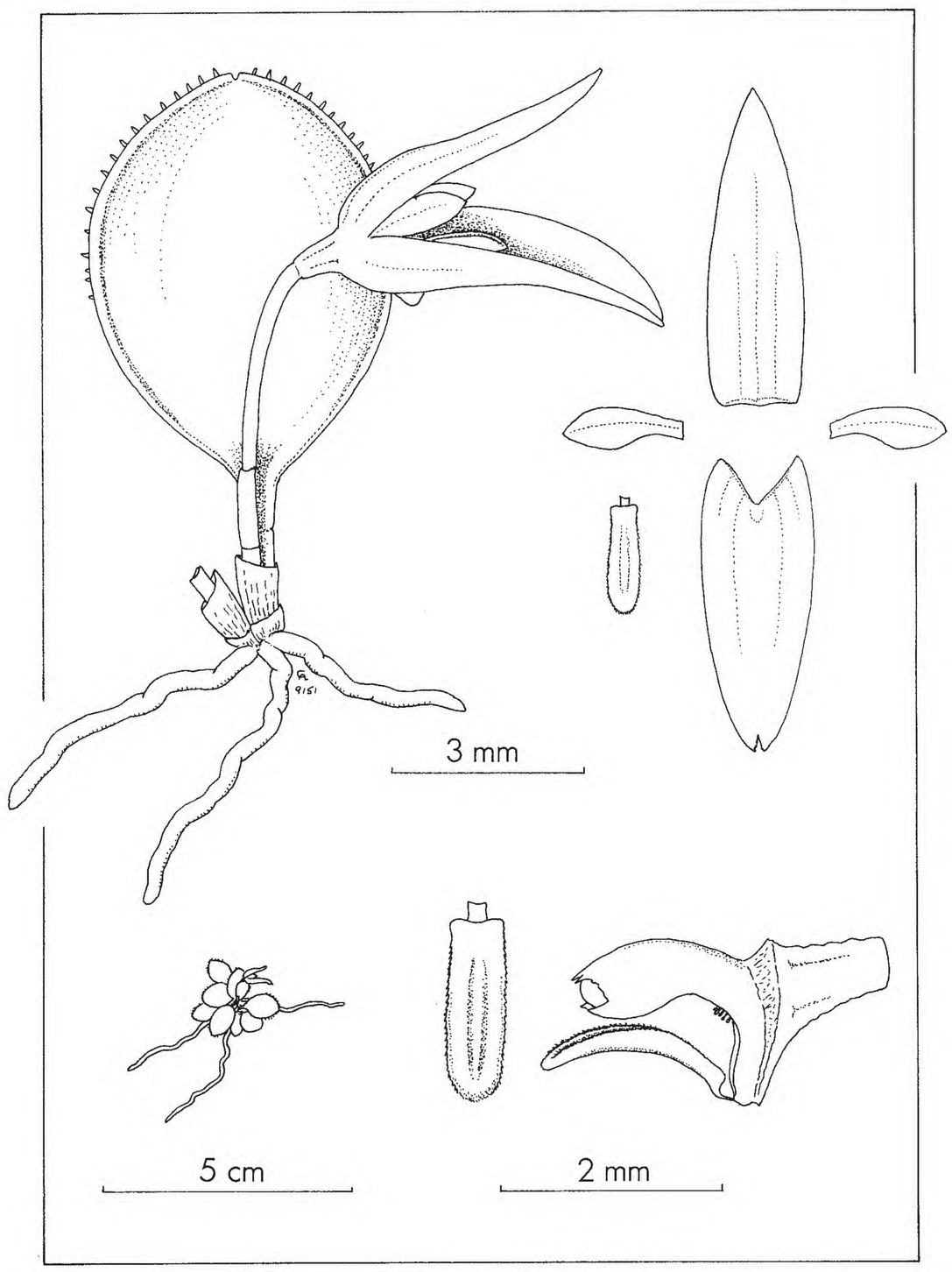


Fig. 36. Specklinia stillsonii

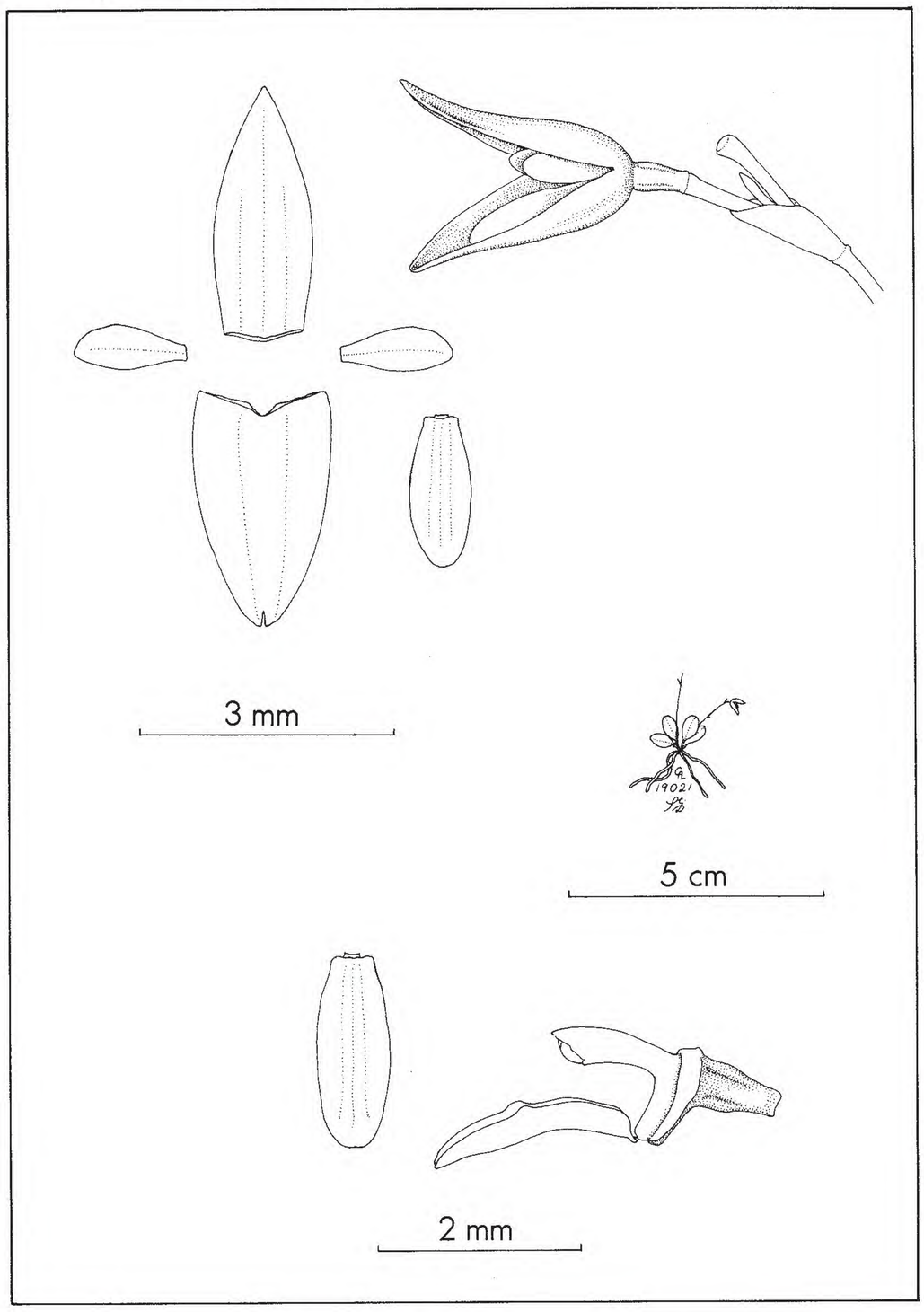


Fig. 37. Specklinia trichyphis

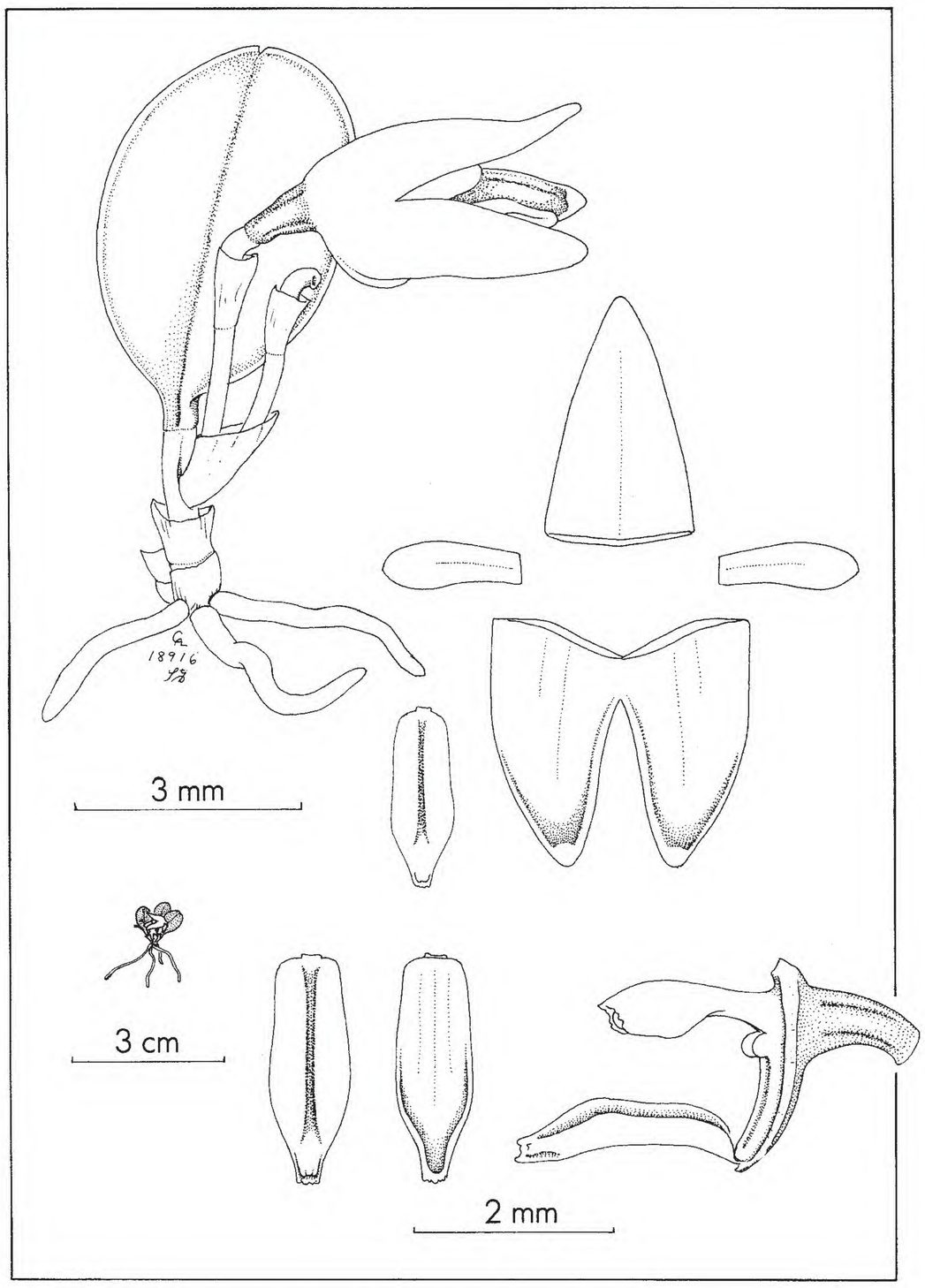


Fig. 38. Specklinia wrightii

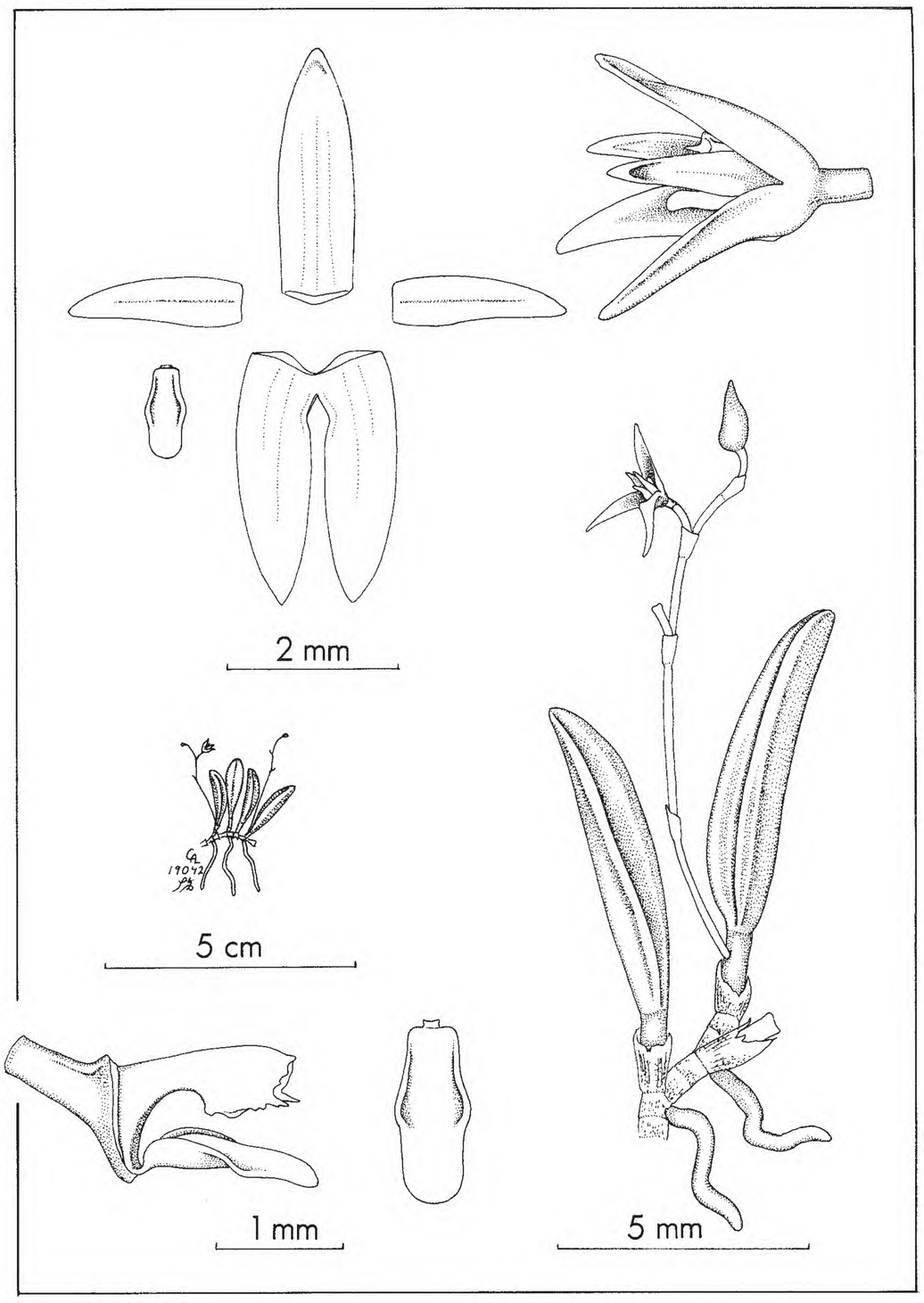


Fig. 39. Specklinia yucatanensis

ANDREETTAEA

Andreettaea Luer, Selbyana 2: 183, 1978.

Type: *Andreettaea ocellus* Luer, Selbyana 2: 183, 1978.

Ety.: Named for Padre Angel Andreetta, presently of Paute, Ecuador, co-collector of this species.

Syn.: *Pleurothallis* subgen. *Andreettaea* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 31, 1986.

This is a unispecific genus from Ecuador distinguished by all three sepals connate at their tips, with the laterals parting for an aperture on the dorsum of the nonresupinate flower.

Andreettaea ocellus Luer, Selbyana 2: 183, 1978.

Type: *Andreettaea ocellus* Luer, Selbyana 2: 183, 1978.

Ety.: From the Latin *ocellus*, "a little eye," alluding to the parting of the lateral sepals on the upper surface of the flower.

Syn.: *Pleurothallis ocellus* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 31, 1986.

Plant small, lithophytic, most likely also epiphytic, caespitose; roots slender. Ramicauls erect, 4-7 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, subacute to obtuse, 1.5-2.5 cm long including the petiole 0.5-1 cm long, the blade 4-5 mm wide, cuneate below into the petiole. **Inflorescence** an erect, lax, successively 2- to 3-flowered raceme borne by a slender peduncle 1.5-2 cm long, borne from a node on the ramicaul; floral bracts thin, infundibular, 1 mm long; pedicel 1.5 mm long; ovary 1 mm long; **sepals** purple, glabrous, the middle sepal elliptical, acute, shortly acuminate, 6.5 mm long, 2 mm wide, 3-veined, connate to the lateral sepals for 3 mm to form an ovoid, nonresupinate flower, the lateral sepals uppermost, elliptical-oblong, acute, shortly acuminate, 6.5 mm long, 2 mm wide, 2-veined, the laterals connate 2 mm, the distal 4 mm free, creating a dorsal opening into the interior of the flower, the apices of all 3 sepals connivent; **petals** translucent purple, elliptical, acute, acuminate, minutely serrate, 4 mm long, 1 mm wide, 1-veined; **lip** uppermost within the flower, purple, thick, oblong-trilobed, 4 mm long, 1.5 mm wide, the apical half oblong, subverrucose, rounded-subtruncate, the basal half concave, long-villous between the involute sides, the lateral lobes just below the middle, acute, antrorse, the disc with a low pair of carinae extending from the lateral lobes onto the middle lobe near the middle, the base thick, fixed to the tip of the column-foot; **column** yellow, spotted with purple, semiterete, 2 mm long, longitudinally winged with the apex cucullate, the foot 2 mm long, the anther and stigma ventral; pollinia 2.

ECUADOR: **Morona-Santiago**: lithophytic in roadside ravine, east of Paute, alt. ca. 2800 m, 10 July 1977, *C. Luer, J. Luer, G. Luer & A. Andreetta 1661* (Holotype: SEL); above Machangara, northwest of Cuenca, alt. ca. 2900 m, 8 Feb. 1978, *C. Luer, J. Luer, & A. Andreetta 2495* (SEL).

Vegetatively, this unique species is similar in habit to the numerous, small, caespitose species similar to *Specklinia* Lindl. Dark purple, non-resupinate flowers are produced successively in a loose, few-flowered raceme about as long as the leaves. The acuminate tips of all three sepals are connivent, only the uppermost lateral sepals parting above their middle to expose the undersurface of the tip of the lip within. The lip is concave and long-villous below the uncinate lateral lobes at the middle.

Illustration: Icones Pleurothallidinarum-III: 32, 1986, Plate 11, C. Luer illustr. 1661.

ARELDIA

Areldia Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 255, 2004.

Type: *Pleurothallis dressleri* Luer, Selbyana 3: 98, 1976.

Ety.: Named for Dr. Robert L. Dressler (an acronym of RLD), formerly of the Smithsonian Tropical Research Institute, Balboa, Canal Zone, who first collected this species.

Syn.: *Pleurothallis* subgen. *Dresslera* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 38, 2004.

This unispecific genus found in central Panama is distinguished by minute, round leaves and a flower several times larger with a crested, fringed lip with an erect, papular, digitiform process above the base.

Areldia dressleri (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 255, 2004.

Type: *Pleurothallis dressleri* Luer, Selbyana 3: 98, 1976.

Ety.: Named for Robert L. Dressler, who originally discovered this species.

Plant very small, but forming large clumps, epiphytic, repent, the rhizome relatively stout, branching, up to 8-10 cm long, 1-3 mm long between ramicauls, enclosed by 2 ribbed, tubular sheaths; roots proportionately thick. Ramicauls stout, suberect, 1-2 mm long, enclosed by a tubular sheath similar to those of the rhizome. **Leaf** light green, veined in dark green, prostrate, coriaceous, suborbicular, obtuse, minutely apiculate, minutely pusticulate, 2-4 mm long, 2-3.5 mm wide, the base broadly cuneate or rounded, contracted into the a petiole 0.5 mm long. **Inflorescence** a successive, 1- to 3-flowered raceme, 5-7 mm long, borne laterally from the ramicaul below the abscission layer; floral bract thin, 1 mm long; pedicel 1 mm long; ovary 1 mm long; **sepals** membranous, glabrous, the dorsal sepal translucent yellow-brown, with 3 mottled stripes in purple, ovate, obtuse, shortly caudate-acuminate, carinate, 7.5 mm long, 3.5 mm wide, connate to the lateral sepals basally, the lateral sepals purple, ovate, oblique, acute, acuminate, 7.5 mm long, 3 mm wide, connate 2 mm; **petals** yellow, glabrous, obovate, obtuse, 3.5 mm long, 2 mm wide, the apical margin minutely irregular; **lip** red-brown with the center purple, suborbicular, broadly rounded at the apex, lacerate, 2.5 mm long, 2.5 mm wide, the disc concave between a pair of fringed crests below the middle, with an erect, cylindrical, tubercular appendage from the center of the base, the base subcordate, shortly hinged to the base of the column; **column** translucent pale yellow-green, broadly winged above the middle, 2.5 mm long, the foot 1 mm long, with a pair of thick calli, the anther, rostellum and stigma ventral.

PANAMA: **Panama**: epiphytic on mossy limbs, Cerro Jefe, alt. 1000 m, 20 Aug. 1967, *R.L. Dressler 3033* (Holotype: SEL); same locality, 8 Jan. 1969, *R.L. Dressler 3600* (SEL); epiphytic along the Altos de Pacora road, alt. 6500 m, 4 Mar. 1976, *C. Luer, J. Luer & P. Taylor 731* (SEL).

This species, without close relatives, is apparently confined to a small area east of Panama City. Produced along a tiny, branching rhizome, the minute, round, watermelon-colored leaves lie upon each other in a tangled mass. The proportionately large flower, with twice the dimensions of the leaf, is held above the leaves. The sepals are purple with acuminate apices. The orbicular lip is bicrested and fringed, with an erect, warty, finger-like callus at the base. The column is broadly winged.

Illustration: Icones Pleurothallidinarum-III: 40, 1986, Plate 16, C. Luer illustr. 731: COVER

ATOPOGLOSSUM

Atopoglossum Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 255, 2004.

Type: *Pleurothallis ekmanii* Schltr., Symb. Ant. 9: 61, 1923.

Ety.: From the Greek *atopoglossum*, "a strange lip," referring to the labellum. with eight pollinia being *Octomeria*.

This endemic, Cuban genus is characterized by a trilobed lip fixed to the column-foot, a narrowly winged column, and eight pollinia. The only other pleurothallid genera with eight pollinia are *Octomeria* R.Br. and *Pleurothollopsis* Porto & Brade, but these two genera are not vegetatively similar to *Specklinia* with abbreviated ramicauls.

Atopoglossum ekmanii (Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 255, 2004.

Bas.: *Pleurothallis ekmanii* Schltr., Symb. Ant. 9: 61, 1923.

Ety.: Named for the collector, E.L. Ekman.

Syn.: *Pleurothallis bovilabia* C.Schweinf., Bull. Amer. Orch. Soc. 15: 235, 1946.

Ety.: From the Latin *bovilabius*, "like a cow's tongue," referring to the labellum.

Plant small, epiphytic, caespitose; roots comparatively fleshy. Ramicauls erect, 1-3 mm long, enclosed by 2 loose, tubular sheaths. **Leaf** erect, coriaceous, elliptical to narrowly elliptical, obtuse to rounded at the apex, 5-25 mm long, 3-6 mm wide, cuneate into the petiole less than 1 mm to 5 mm long. **Inflorescence** an erect, lightly flexuous, successively to simultaneously, several-flowered raceme, 3-10 cm long, including the peduncle 5-15 mm long, subtended by a spathe 1-2 mm long, from near the apex of the ramicaul; floral bracts oblique, 2 mm long; pedicels 1 mm long; ovary 1.5 mm long; **sepals** light green, membranous, glabrous, the dorsal sepal elliptical, subacute, 5-6 mm long, 2.5 mm wide, 3-veined, the lateral sepals free, elliptical, oblique, subacute to obtuse, 5-6 mm long, 2.5 mm wide, 3-veined;

petals light green with a few large purple spots, elliptical, subacute, acuminate, 3-3.5 mm long, 1.4 mm wide, 1-veined; **lip** green, mottled with purple, trilobed, 3.75 mm long, 1.6 mm wide, 4 mm wide across lobes expanded, the apex sagittate-triangular above a constriction above apical fourth, subacute, oblong and concave below the apical fourth, with a pair of low, rounded calli at the constriction, the lateral lobes oblong, oblique, obtuse, near the middle, erect in the natural position and surrounding the column, the base thickened with incurved margins, solidly connate to the column-foot; **column** slender, semiterete, 3 mm long, the foot 1 mm long, the anther with 8 pollinia, rostellum and stigma ventral.

CUBA: **Holguin**: Sierra de Cristal, alt. 1325 m, *E.L. Ekman 6831* (Holotype: S); Moa, Monte de la Breña, alt. 500 m, *Bros. Léon, Clément, Chrysogone & Alain 22586* (holotype of *P. bovilabia*: AMES; Isotype: HAC); Moa, Aereopuerto de Moa, 9 Apr. 1945, *J. Acuña & J.T. Roig 8604* (HAC); Aereopuerto de Moa, 9 Apr. 1945, *J. Acuña 12388* (HAJB, US); Moa, Cerro de Cananova, 20 July 1949, *Bros. Alain & Clemente A.1004* (HAC); Sierra Nipe, near Woodfred, rocky arroyos, alt. 400-550 m, 18 Jan. 1910, *J.A. Schafer 3584* (NY); Moa, camino a La Melba, Arroyo Las Comadres, alt. 350 m, *C. Luer, J. Luer, M. Diaz, J. Llamacho, J. Ackerman, R. & K. Dressler 18657* (HAJB; MO); Moa, camino al Toldo, Alto de La Calinga, alt. 950 m, collected by J. Llamacho, 30 Nov. 1997, *C. Luer, J. Luer, M. Díaz, J. Llamacho, J. Ackerman, K. & R. Dressler 18659, 18660* (HAJB, MO).

This species, apparently endemic in the low mountains of the eastern Cuba, is characterized by the small tufted plant and an elongated raceme of proportionately large flowers, but the size of the flowers varies greatly. The light green sepals are free, obtuse and connivent, and the petals and lip are spotted with purple. The lip is constricted below a sagittate apex, and a pair of erect, oblong lateral lobes surround the column. A circular callus is present at the base of the lip that is thickened and solidly connate to the column-foot. Eight pollinia of equal size are contained free within the anther cap.

Illustration: Fig. 40, herein, C. Luer illustr. 18657.

Atopoglossum excentricum (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 255, 2004.

Bas.: *Octomeria excentrica* Luer, Lindleyana 14: 106, 1999.

Ety.: From the Latin *excentricus*, "off center, eccentric," referring to the odd lip.

Syn.: *Pleurothallis excentrica* (Luer) Luer, Rev. Soc. Bol. Bot. 3: 50, 2001.

Plant very small, epiphytic, shortly repent, the rhizome up to 2 cm long, 1 mm long between ramicauls; roots slender. Ramicauls erect, 1.5 mm long, enclosed by a loose, tubular sheath. **Leaf** erect, thickly coriaceous, narrowly linear-elliptical, acute, 9-12 mm long, 2-2.5 mm wide, the base narrowly cuneate, sessile. **Inflorescence** a short raceme, borne by a peduncle 1.5 mm long, from a node on the ramicaul, with a loose sheath 1.5 mm long; floral bract tubular, 1 mm long; pedicel 1 mm long; ovary 1 mm long; **flowers**: **sepals** purple, yellow toward the base, glabrous, fleshy, the dorsal sepal ovate, acute, concave, 4.25 mm long, 1.75 mm wide, 3-veined, connate to the lateral sepals for 0.5 mm, the lateral sepals connate into an ovate, concave, bicarinate, biapiculate synsepal, 4.25 mm long, 3 mm wide unexpanded, 2-veined; forming a rounded mentum with the column-foot; **petals** membranous, elliptical-obovate, acute, 3.5 mm long, 1.5 mm wide, 1-veined; lip ovate, trilobed, 3 mm long, 2 mm wide across the lobes expanded, the apex narrowly rounded, minutely denticulate, papillose, the lateral lobes short, acute, antrorse, near the middle, the basal angles thick, erect, broadly rounded, the disc shallowly concave between a pair of minutely tuberculate calli from the bases of the lobes to the apical third, with a circular structure on the basal fourth that is concave anteriorly and elevated with a curved callus above the base, the base broadly and firmly connate to the base of the column; **column** slender below the middle, winged above the middle, obtusely denticulate at the apex, 2 mm long, the anther with 8 pollinia and stigma ventral, the foot thick, 1 mm long.

CUBA: **Holguín**: Moa, Río Cayoguan, July 1949, *Alain, Clemente & Crisegano A.896 bis* (Holotype: AMES; Isotype Herb. Ch. F. Barker 15598), C. Luer illustr.

This tiny species is characterized by a row of narrowly linear leaves produced by ramicauls about one and a half millimeters long and about one millimeter apart on a creeping rhizome. The flower appeared to have been borne singly, but later proved to be successively flowered. The dorsal sepal and synsepal barely separate, and the petals are proportionately large. The lip is ovoid with the apical half narrowly obtuse and papillose. Below the middle, the sides are thick and erect behind short, antrorse lateral lobes. Immediately above the base is a circular structure, concave anteriorly, and elevated with a curved callus at the base. The base is solid-

ly connate to the base of the column. The anther is eight-loculate with eight, free, pyriform pollinia.

Illustration: Fig. 41, herein, C. Luer illustr. 18844.

CHAMELOPHYTON

Chamelophyton Garay, Orquideología 9: 115, 1974.

Type: *Restrepia kegelii* Rchb.f., Linnaea 41: 133, 1877 [=*Chamelophyton kegelii* (Rchb.f.) Garay].
Ety.: From the Greek *chamelophyton*, "a ground-creeping plant," referring to the repent habit.

Syn.: *Garayella* Brieger, Trab. Cong. Nac. Bot. 42, 1975 [=*Chamelophyton* Garay].
Ety.: Named for Leslie Garay, author of the genus.

This genus is distinguished by a creeping, round-leaved habit; a single-flowered inflorescence; and six pollinia.

Chamelophyton kegelii (Rchb.f.) Garay, Orquideología 9: 115, 1974.

Bas.: *Restrepia kegelii* Rchb.f., Linnaea 41: 133, 1877.
Ety.: Named for Hermann Aribert Heinrich Kegel, nineteenth century German botanist, who collected this species.

Syn.: *Barbosella kegelii* (Rchb.f.) Schltr., Repert. Spec. Nov. Regni Veg. 15: 262, 1918.

Syn.: *Pleurothallis hexandra* Garay & Dunsterv., Venez. Orch. Illustr. 3: 252, 1965, not *Pleurothallis kegelii* Rchb.f., 1877.
Ety.: From the Greek *hexandrus*, "six, male," referring to the six pollinia.

Syn.: *Garayella hexandra* (Garay & Dunst.) Brieger, Trab. Cong. Nac. Bot. 42, 1977.

Plant small, epiphytic, repent, the rhizome stout, 3-5 mm long between ramicauls, with 2 sheaths; roots proportionately thick, from along the rhizome. Ramicauls stout, 1 mm long, enclosed by a loose, tubular sheath. **Leaf** suberect to prostrate, thickly coriaceous, pustular-verrucose, broadly elliptical to circular, obtuse to rounded, 7-12 mm long, including an indistinct petiole less than 1 mm long, 5-8 mm wide, contracted below into the base. **Inflorescence** a single flower, borne by a peduncle 1-1.5 mm long, laterally from the ramicaul; floral bract 1.5 mm long; pedicel 0.5 mm long; ovary 1 mm long; **sepals** fleshy, glabrous, pale brown, suffused with purple, subcarinate, the dorsal sepal oblong-elliptical, obtuse, 6.5 mm long, 2.5 mm wide, 3-veined, barely connate to the lateral sepals, the lateral sepals connate into an ovoid, concave, obtuse, shortly bifid synsepal, 6.5 mm long, 4.5 mm wide unexpanded, 6-veined; **petals** glabrous, oblong, obtuse, 5 mm long, 2 mm wide, 3-veined, slightly verrucose at the apex; **lip** fleshy, brown, suffused and spotted with purple, obovate-trilobed, 4.5 mm long, 2.75 mm wide, the apex broadly rounded, cellular-glandular, the disc shallowly concave between a pair of calli on the middle third, the lobes below the middle, broadly falcate, antrorse, obtuse, the base truncate, hinged to the column-foot; **column** semiterete, minutely denticulate at the apex, 2.5 mm long, the foot 1.5 mm long, the anther and stigma hooded and ventral, pollinia 6.

SURINAME: shady forest near Mariepaston, May 1846, *H.A.H. Kegel 1355* (Holotype: W).
VENEZUELA: **Bolívar**: New Orchid Island, Río Carrao, alt. ca. 1,600 ft., Dec. 1962, *G.C.K. Dunsterville 751* (holotype of *P. hexandra*: AMES), C. Luer illustr. 11398.

This little species occurs infrequently in northeastern South America. It is characterized by the prostrate, round, verrucose leaves produced by a creeping rhizome. The single, fleshy flower is borne by a short, pedicel and peduncle. The dorsal sepal, concave synsepal, and petals are obtuse. The lip is three-lobed below the middle and bicarinate centrally. The column is semiterete, and the anther contains six pollinia, four large, and two smaller.

Illustration: Icones-I: 22, 1986, Plate 5, C. Luer illustr. 11398.

DONDODIA

Dondodia Luer, gen. nov.

Type: *Cryptophoranthus erosus* Garay, J. Arnold. Arb. 50: 462, 1969 [=*Dondodia erosa* (Garay) Luer].
Ety.: Named for the Rev. Donald D. Dod, indefatigable collector of Hispaniolan orchids, who also discovered this most unusual taxon.

Folia denticulata. Florae proportione grandissimae. Sepala ad apices adhaerenta synsepalo cynbiformi. Labellum crassum, late ovatum, verrucossimum erossimumque.

This is a unispecific genus, endemic on Hispaniola, with the description of the species sufficing for the genus.

Dondodia erosa (Garay) Luer, comb. nov.

Bas.: *Cryptophoranthus erosus* Garay, J. Arnold. Arb. 50: 462, 1969 [=*Dondodia erosa* (Garay) Luer]., not *Pleurothallis erosa* Urb., 1917.

Ety.: From the Latin *erosus*, "erose," referring to the foliage.

Syn.: *Pleurothallis cymbiformis* Dod, Moscosoa 3: 101, 1984, replaced name for *Cryptophoranthus erosus* Garay.

Ety.: From the Latin *cymbiformis*, "boat-shaped," referring to the synsepal.

Syn.: *Specklinia erosa* (Garay) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant small, epiphytic, caespitose; roots proportionately thick. Ramicauls stout, erect, 3-5 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, subacute to obtuse, with denticulate-erose margins, subpetiolate, 16-27 mm long including a petiole ca. 2 mm long, 5-8 mm wide, the base cuneate into the petiole. **Inflorescence** a single flower borne by a peduncle 2-3 mm long, laterally from the ramicaul; floral bract oblique, acute, 5 mm long; pedicel 1 mm long with a filament 3 mm long; ovary 1 mm long; **sepals** dark purple, glabrous within, cellular-papular externally, subcarinate, the dorsal sepal ovate, concave, subacute, 13 mm long, 7.5 mm wide expanded, with 1 visible vein, connate basally to the lateral sepals for 0.5 mm, lightly adherent at the tip, the lateral sepals connate into a concave, ovoid, obtuse synsepal, 11.5 mm long, 11 mm wide expanded; **petals** glabrous, elliptical, acute, 2.5-3 mm long, 1.25 mm wide, 1-veined; **lip** thick, verrucose, broadly ovate, rounded at the apex, 3 mm long, 3 mm wide, the margins denticulate-erose, the disc with a pair of low, verrucose calli near the middle, the base broadly subtruncate, hinged with a short, narrow, slender claw to the tip of the column-foot; **column** winged above the middle, denticulate at the apex, 2 mm long, the anther and stigma ventral, the foot 1 mm long.

DOMINICAN REPUBLIC: **Constanza**: vicinity of Constanza, collected by D.D. Dod, cultivated by *A.H. Liogier 13508* (Holotype: NY), C. Luer illustr. 14805; El Convento, Dec. 1968, *D. Dod 125* (NY).

This little species is characterized by a tuft of minutely denticulate-erose leaves borne by much shorter ramicauls. The proportionately large, dark purple flower is borne singly by a short peduncle. The deeply concave synsepal and the concave dorsal sepal are adherent at the tips to form wide, lateral apertures, in a manner seen in several other taxa, i.e. *Cryptophoranthus* Barb.Rodr., and *Zootrophion* Luer. The lip is broadly ovate and coarsely verrucose and erose.

Illustration: Fig. 42, herein, C. Luer illustr. 14805.

GERARDOA

Gerardoa Luer, gen. nov.

Type: *Pleurothallis montezumae* Luer, Lindleyana 11: 83, 1996.

Ety.: Named for Gerardo Herrera Ch., indefatigable collector of Costa Rican orchids.

Habitus grandis. Folium longipetiolatum. Pedicelus abbreviatus. Sepala lateralium semiconnata infra medium concava. Ovarium undulatum. Labellum verrucosum apiculatum.

Gerardoa is a unispecific genus with the description of the species sufficing for the genus.

Gerardoa montezumae (Luer) Luer, comb. nov.

Bas.: *Pleurothallis montezumae* Luer, Lindleyana 11: 83, 1996.

Ety.: Named for Cerro Montezuma where the species was discovered.

Syn.: *Specklinia montezumae* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant medium in size, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 2-3 cm long, enclosed by 2-3 loose, brown, tubular sheaths. **Leaf** erect, coriaceous, long-petiolate, 9-15 cm long including a slender petiole 3-5 cm long, the blade elliptical, acute, 2-3.2 cm wide, cuneate below into the petiole. **Inflorescence** a successively two-flowered raceme, the flowers 0.5 cm apart, borne by a slender peduncle 1-1.5 cm long, from low on the ramicaul; floral bracts 2-3 mm long; pedicel 5 mm long; ovary crested, 1.5 mm long; **sepals** orange-brown, glabrous, tall-carinate, the dorsal sepal ovate, acute, apiculate, concave below the apical third, 12 mm long, 6 mm wide, 5-veined, the lateral sepals connate 5 mm to above the middle into an elliptical-obovoid, bifid, bicarinate, synsepal, concave below the middle, with a small mentum below the tip of the column-foot, convex above the middle, 12 mm long, 9 mm wide together expanded, each 3-veined, the apices obtuse, apiculate; **petals** oblong, obtuse, minutely

apiculate, 4 mm long, 1.75 mm wide, 1-veined; **lip** oblong, 4.5 mm long, 1.5 mm wide, with the distal half verrucose and denticulate, obtuse, apiculate from beneath, the disc shallowly channeled between converging calli above the middle, flattened below the middle, the base subtruncate, hinged beneath to the column-foot; **column** semiterete, 3.5 mm long, with the apex denticulate, the anther, rostellum and stigma ventral, the foot 2.5 mm long, concave toward the apex below a converging pair of calli.

COSTA RICA: **Alajuela**: Upala, Bijuagua, Finca Montezuma, ladera sur de Cerro Montezuma, alt. 600 m, 18 July 1993, *G. Herrera 6280* (Holotype: K; Isotype: CR), C. Luer illustr. 17272.

This unique species, rare and endemic in Costa Rica, is superficially similar to *Sarcinula fulgens* (Rchb.f.) Luer, but differs in the elongated petiole of the large, broadly elliptical leaf, and a very short peduncle that bears a successive and distantly two-flowered raceme. The flowers of the two species are of similar orange color and size, but in *Gerardoa montezumae*, the sepals are tall-carinate and apiculate; the lateral sepals are semiconnate and concave below the middle; and the lip is verrucose and denticulate above the middle and without lateral lobes. Most curious is the column-foot that is concave between a pair of calli as seen in some species of *Zootrophion* Luer, and the ovary is undulate-crested as well.

In habit, size, and color of the flower, *Gerardoa montezumae* is also superficially similar to *Sarcinula guanacastensis* (Ames & C.Schweinf.) Luer, which also has a lobeless lip with a verrucose apical half. The floral parts of *G. montezumae* differ similarly as from *S. fulgens*.

Illustration: Fig. 43, herein, C. Luer illustr. 17272.

INCAEA

Incaea Luer, gen. nov.

Type: *Pleurothallis yupanki* Luer & R.Vásquez, Phytologia 55: 203, 1984.

Ety.: Named for the Inca who built the stone fortress where this species now lives.

Planta minuta repens. Folia late elliptici plani. Sepala glabra supra medium connata. Labellum glabrum.

This is a unispecific genus from Bolivia characterized by a repent rhizome with minute, broadly elliptical leaves and a solitary flower with glabrous, semiconnate sepals, and a glabrous lip. The description of the species suffices for the genus.

Incaea yupanki (Luer & Vásquez) Luer, comb. nov.

Ety.: Named for chief Inca Yupanki who built the stone buildings, now in ruins, upon which this species grows.

Bas.; *Pleurothallis yupanki* Luer & Vásquez, Phytologia 55: 203, 1984.

Syn.: *Masdevallia hornii* Königer, Die Orchidee 42(4): 190, 1991.

Ety.: Named for Peter Horn of Greisling bei München, collector of the species.

Syn.: *Specklinia yupanki* (Luer & Vásquez) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 265, 2004.

Plant very small, lithophytic, repent, 2-3 cm long, appressed upon the substrate, the rhizome comparatively stout, 1 mm thick, 0.5 mm long between ramicauls, enclosed by 1-2 deciduous, tubular sheaths; roots 1-1.5 mm thick; ramicauls stout, ca. 0.5 mm long, enclosed by a deciduous, tubular sheath. **Leaf** prostrate, thickly coriaceous, smooth, suffused with dark purple, broadly elliptical, 4-5 mm long, 2.5-3 mm wide, 1-1.5 mm thick, the apex obtuse to rounded, minutely apiculate, the base cuneate into the subpetiolate base. **Inflorescence** a single, proportionately large flower followed at intervals by 1-2 others in a congested raceme, the peduncle 0.5 mm long from the base of the leaf; pedicel 1 mm long; floral bract 1-1.5 mm long; ovary 0.5 mm long;**sepals** fleshy, dark purple, glabrous, the dorsal sepal elliptical, obtuse, concave, 4 mm long, 2.5 mm wide, 3-veined, connate to the lateral sepals for 2.25 mm to form a subspherical tube, the lateral sepals connate to above the middle into an arcuate, concave, bifid synsepal with obtuse apices, 3.5 mm long, 2.75 mm wide unexpanded; **petals** purple, glabrous, oblong, obtuse, 2 mm long, 1.25 mm wide, 1-veined; **lip** purple, oblong-trilobed, 2 mm long, 0.8 mm wide, the apex rounded, the lateral lobes erect, shortly triangular, below the middle, the base truncate, minutely biauriculate, hinged to the column-foot; **column** terete, longitudinally winged above the middle, 1.5 mm long, denticulate at the apex, the anther, rostellum and stigma ventral, the foot 0.75 mm long.

BOLIVIA: **Santa Cruz**: lithophytic on stone Inca ruins east of Samaipata, alt. 2500 m, Nov. 1982, *R. Vásquez & N. Williams s.n.* (Holotype: SEL), C. Luer illustr. 8524; lithophytic on stony outcrops at Ruinas El Fuerte near Samaipata, alt. 1950 m, 29 Nov. 1992, *C. Luer, J. Luer & W. Teague 16502* (MO); same locality, collected Mar. 1987, flowered in cultivation Feb. 1991 by *P. Horn* (holotype of *M. hornii*: M; isotypes: K, LPB).

Superficially similar to *Phloeophila* Hoehne & Schltr., this minute, creeping species has been known to grow on stones of the Inca ruins near Samaipata, Bolivia, for many years. Königer (1991) described it as a *Masdevallia* Ruiz & Pav. It is characterized by tiny, broadly elliptical, overlapping leaves appressed to mossy stone, and a purple flower as large as the leaf. The glabrous sepals are connate near the middle into a subcircular flower. The petals are oblong and obtuse, and the lip is smooth and oblong with minute, acute, marginal angles just below the middle.

Illustration: Fig. 44, herein, C. Luer illustr. 8524.

LOMAX

Lomax Luer, gen. nov.

Type: *Physosiphon punctulatus* Rchb.f., Bot. Zeitung (Berlin) 24: 385, 1866, not *Pleurothallis punctulata* Rolfe, 1888.

Ety.: The name *Lomax* is without meaning, in allusion to the unknown relationship to other species.

Racemus multiflorus folio brevicaule multilongior. Sepala carnosa in tubum non constrictum semiconnata.

The single species of this genus was described by Reichenbach (1866) in *Physosiphon* Lindl., because of the semiconnate sepals.

Lomax punctulata (Rchb.f) Luer, comb. nov.

Bas.: *Physosiphon punctulatus* Rchb.f., Bot. Zeitung (Berlin) 24: 385, 1866, not *Pleurothallis punctulata* Rolfe, 1888.

Ety.: From the Latin *punctulatus*, "spotted," referring to the sepals.

Syn.: *Physosiphon minor* Rendle, J. Bot. 38: 275, 1900 [=*Lomax punctulata* (Rchb.f) Luer].

Ety.: From the Latin *minor* (minor, the comparative of *parvus*), "smaller," referring to the size of the flower in relation to that of *Physosiphon guatemalensis* Rolfe [= *Physosiphon tubatus* (Lodd.) Rchb.f. 1861].

Syn.: *Physosiphon cooperi* Ames, Sched. Orch. 1: 2, 1922 [=*Lomax punctulata* (Rchb.f) Luer].

Ety.: Named for the collector, Juan J. Cooper.

Syn.: *Pleurothallis minor* (Rendle) L.O.Williams, Ceiba 1: 186, 1950 [=*Lomax punctulata* (Rchb.f) Luer

Syn.: *Stelis punctulata* (Rchb.f.) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6, t. 690, 2003.

Syn.: *Specklinia minor* (Rendle) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 5-15 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, obtuse, petiolate, 20-30 mm long including a petiole 3-5 mm long, 9-12 mm wide, cuneate below into the petiole. **Inflorescence** a subsecund, simultaneously flowered raceme, 10-18 cm long including the slender petiole ca. 3 cm long, borne laterally from near the apex of the ramicaul; floral bracts thin, 3 mm long; pedicels 3 mm long; ovary 2.5 mm long; **sepals** yellow, suffused with purple below the middle, fleshy, glabrous, the dorsal sepal elliptical, obtuse, concave, 4.5 mm long, 1.5 mm wide, 3-veined, connate to the lateral sepals for 2 mm to form a short, cylindrical tube, the lateral sepals oblong-ovate, shallowly concave, obtuse, 4 mm long, 1.5 mm wide, 2-veined, connate basally for 1 mm; **petals** fleshy, purple, elliptical, subacute, 1.25 mm long, 0.6 mm wide, minutely verrucose externally; **lip** purple, fleshy, oblong, subtrilobed, 2 mm long, 0.8 mm wide, the apex thick, obtuse, verrucose, the margins broadly rounded and erect on the middle third, the base truncate, hinged on the end to the column-foot; **column** semiterete, winged above the middle, 1.75-1.6 mm long, with the apex bidentate, the anther and stigma ventral.

COSTA RICA: sine loc., ca. 1867, *A. Endres 348* (W). Sine loc., cultivated by M.W. Barbey at Chambésy near Geneva, Switzerland, collected by *A. Tonduz s.n.* (holotype of *Ph. minor*: G). **Cartago**: sine loc., alt. 5,000 ft., May 1888, *Juan J. Cooper 481* (holotype of *Ph. cooperi*: US; isotype: AMES). **San José**: near San Isidro, alt. 2000-2500 m, collected by W. Weingarten, cultivated 28 Apr. 1977, *A.S.W.*

Chantry s.n. (SEL), C. Luer illustr. 1608. Sine loc., cultivated at Glasnevin, Oct. 1901, by *Moore s.n.* (K). Sine loc., collected 12 Mar. 1934, flowered in cultivation at K, 401-1935, received from *C.H. Lankester s.n.* (K).
GUATEMALA: **Huehuetenango**: northwest of Cuilco, Cerro Chiquihui above Carrizal, *J.A. Steyermark 50803* (AMES).
Erroneously presumed to be from "Neu Granada," sine loc., cultivated in Wandsworth, West Hill, Oct. 1865, by *S. Rücker s.n.* (holotype of *Physosiphon punctulatus*: W).

This species, without close relatives, is uncommon in Central America. *Lomax punctulata* is distinguished by a small habit; thick, petiolate, short-stemmed leaves; and a simultaneously and successively flowered raceme that far exceeds the leaves. The small, fleshy, yellow and purplish mottled or spotted sepals are connate half their length into a broad, non-constricted tube with the thick, free portions not widely spread. The petals are short and elliptic, and the lip is thick and oblong with a verrucose apex.

Illustration: Fig. 45, herein, C. Luer illustr. 1608.

LUERANTHOS

Lueranthos Szlach. & Marg., Polish Bot. J. 46(2): 117, 2001.
Type: *Pleurothallis vestigipetala* Luer, Selbyana 3: 404, 1977.
Ety.: Named for C. Luer who described the species.

Syn.: *Pleurothallis* subgen. *Aenigma* sect. *Vestigipetala* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 26, 1986.
Type: *Pleurothallis vestigipetala* Luer, Selbyana 3: 404, 1977.

This is a genus with a single species characterized by a creeping habit, free sepals, microscopic petals, and a simple lip wrapped around a cylindrical column.

Lueranthos vestigipetalus (Luer) Szlach. & Marg., Polish Bot. J. 46(2): 117, 2001.
Bas.: *Pleurothallis vestigipetala* Luer, Selbyana 3: 404, 1977.
Ety.: From the Latin *vestigipetalus*, "with vestigial petals," referring to the nearly non-existent petals.

Plant small, epiphytic, long-repent, 10-20 cm long, the rhizomes stout. branching, ca. 5 mm long between ramicauls, roots slender. Ramicauls ascending, 3-5 mm long, enclosed by 1-2 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, 10-25 mm long, 3-5 mm wide, narrowed below into the subpetiolate base. **Inflorescence** a loose, flexuous, successively few-flowered raceme 1-5 cm long, borne by a filiform peduncle from a node on the ramicaul; floral bracts 2-3 mm long; pedicels 2-4 mm long; ovary 1-3 mm long; **sepals** yellow, glabrous, the dorsal sepal elliptical-ovate, slightly acuminate, acute, 6 mm long, 2 mm wide, 3-veined, the lateral sepals similar, 6 mm long, 1.5 mm wide, 3-veined; **petals** minute, ovate, ciliate, obtuse, 0.6 mm long, 0.2 mm wide, without visible vein; **lip** translucent yellow, elliptical with the sides recurved about the column, subacute, 2.75-3 mm long, 1.2 mm wide expanded, cellular pubescent externally, glabrous within, the base cuneate, attached to the base of the column; **column** semiterete, 3-4 mm long, footless, the anther and stigma apical.

ECUADOR: **Azuay**: in trees along the stream from Lago Zaragucho, west of Cuenca, alt. 3000 m, 2 Mar. 1977, *C. Luer, J. Luer & K. Cordoba 1496* (Holotype: SEL). **Morona-Santiago**: between Guamote and Macas, alt. 3000 m, 14 Oct. 2004, *A. Hirtz et al. 9091* (MO). **Zamora-Chinchipe**: Loja-Zamora road, alt. 2700 m, 21 Mar. 1985, *C. Luer, J. Luer & A. Hirtz 10730* (MO). **Carchi**: east of Gruta La Paz, alt. 3200 m, 13 Sept. 2004, *A. Hirtz, W. & J. Coeck 9009* (MO).

This species is widely distributed in Ecuador at high altitudes as it climbs in shrubby vegetation, often forming tangled masses. The rhizomes are stout and branching, bearing small, elliptical leaves. The racemes are loosely flexuous and usually surpassing the leaves. The three sepals spread widely to expose the erect, tubular column clasped by the thin lip. The minute, barely to be seen, vestigial petals cling to the sides of the base. Cleistogamous clones rare commonly forming fruit are not rare.

Illustration: Icones-III: 28, 1986, Plate 9, C. Luer illustr. 10730.

MADISONIA

Madisonia Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 258, 2004.

Type: *Pleurothallis kerrii* Braga, Bradea 3: 172, 1981 [=*Madisonia kerrii* (Braga) Luer].

Ety.: Named in honor of Michael Madison, co-collector of the only species.

This unispecific genus is distinguished by a creeping rhizome; abbreviated ramicauls; an elongated peduncle; a deep-chinned, single flower; and a saccate attachment of the lip to the column-foot.

Madisonia kerrii (Braga) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 258, 2004.

Bas.: *Pleurothallis kerrii* Braga, Bradea 3: 172, 1981 [=*Madisonia kerrii* (Braga) Luer].

Ety.: Named in honor of Dr. Warwick E. Kerr, former director of I.N.P.A.

Plant very small, epiphytic, long-repent, 20-30 cm long, the rhizomes 4-10 mm long between ramicauls, in 3 segments, each with a tubular, ribbed, ciliate sheath; roots slender. Ramicauls up to 1 mm long, enclosed by 1 tubular, ribbed, ciliate sheath. **Leaf** prone, thickly coriaceous, broadly elliptical to subcircular, obtuse, 4-5 mm long, 3-4 mm wide, contracted below into the sessile base. **Inflorescence** a loose, successively few-flowered raceme ca. 5 mm long, borne by an erect, filiform peduncle, 2.5-4 cm long, from the apex of the ramicaul; floral bracts 1 mm long; pedicels 1.5 mm long; ovary 1.5-2 mm long; **sepals** purple, glabrous, the dorsal sepal elliptical-ovate, obtuse, slightly concave, 3.3 mm long, 1.3 mm wide, 3-veined, the lateral sepals connate 1 mm into a bifid lamina 3.3 mm long, 2.3 mm wide, each 3-veined, the apices obtuse, the bases connate to the column-foot 1 mm to form a deep, acute mentum; **petals** purple, linear-elliptical, acute, 3.3 mm long, 0.75 mm wide, 1-veined; **lip** purple, ovate-trilobed, 2.6 mm long, 1.3 mm wide across the basal lobes, the apical lobe oblong, obtuse, 1.5 mm long, the lateral lobes below the middle, erect, oblique, antrorse, the disc smooth between the basal lobes, with a thickened, verrucose callus overlying the anterior lobe, the base narrowed, concave with the apex of the column-foot, with a minute keel within, the base of the lip continuous with the column-foot without a hinge; **column** semiterete, 1.6 mm long, the anther subapical, the stigma ventral, the foot slender, 1.6 mm long.

BRAZIL: **Amazonas**: epiphytic in humid forest, Rio Marié, tributary of Rio Negro, near Tapuruquara Mirim, alt. 100 m, 16 Oct. 1978, *M. Madison, P.I.S. Braga & H. Kennedy (PFE 366)* (Holotype: INPA).
PERU: **Loreto**: Maynas, Iquitos, between Quisto Cocha and Varillal, alt. 150 m, 10 July 1984, *S.M. Rimachi 7572* (IBE, MO); same area, alt. 130 m, 24 July 1984, *S. McDaniel & M. Rimachi 27837* (MO), C. Luer illustr. 17019.
VENEZUELA: **Amazonas**: Guainía, between Maroa and Boca Chico, *G.A. Romero, L.M. Campbell & C. Gómez 3190* (VEN); Atures, Salto Yureba, lower Vemtauri basin, *R. Liesner 18769-A* (MO, VEN); Río Negro, vicinity of San Carlos de Río Negro, *G. Carnevali, R. Liesner & G. Santana 2599* (VEN).

This tiny species is widely distributed in the Amazonian basin. The rhizome is long-repent with ciliate sheaths, and prostrate, sessile, subcircular leaves. The one-millimeter-long ramicauls are enclosed with only one ciliated sheath. An elongated peduncle bears a successively few-flowered raceme. The lateral sepals form a deep, acute mentum with the column-foot. The lip is trilobed with the base decurved into the mentum where it is continuous with the foot without being hinged.

Illustration: Fig. 46, herein, C. Luer illustr. 17019.

MASDEVALLIANTHA

Masdevalliantha (Luer) Szlach. & Marg., Polish Bot. J. 46(2): 117, 2001.

Type: *Pleurothallis masdevalliopsis* Luer, Phytologia 44: 170, 1979 [=*Masdevalliantha masdevalliopsis* (Luer) Szlach. & Marg.].

Ety.: Named for the superficial similarity of the flowering plant to a species of *Masdevallia*.

Syn.: *Pleurothallis* subgen. *Masdevalliantha* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 44, 1986.

This genus of two species is characterized by long-caudate sepals, broadly obtuse petals, and a short column with an apical anther and stigma, and with an elongated tip of the column-foot that protrudes into a cavity at the base of the lip.

Masdevalliantha longiserpens (C.Schweinf.) Szlach. & Marg., Polish Bot. J. 46(2): 117, 2001.

Bas.: *Pleurothallis longiserpens* C.Schweinf., Bot. Mus. Leafl. 10: 183, 1942.

Ety.: From the Latin *longiserpens*, "long-creeping," referring to the habit.

Plant small to medium in size, epiphytic, shortly but densely repent, the rhizomes 2-5 mm long between ramicauls; roots slender. Ramicauls stout, ascending-erect, 2-5 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, subpetiolate, 4-8 cm long, 0.8 cm wide, narrowed below into an ill-defined petiole ca. 5 mm long. **Inflorescence** a solitary flower, sometimes followed by a second, borne by a slender peduncle 20-25 mm long, from the ramicaul below the apex; floral bract 3 mm long; pedicel 13-15 mm long; ovary 5 mm long, thickly carinate. **sepals** translucent greenish, glabrous, carinate, the dorsal sepal elliptical, concave, the blade 12 mm long, 6 mm wide, 3-veined, the apex subacute, contracted into a slender tail 6-10 mm long, the lateral sepals narrowly ovate, acuminate into slender tails, 20 mm long, 3 mm wide, connate 1 mm, each 2-veined; **petals** translucent, broadly obovate, unguiculate, 4.5 mm long, 4 mm wide, 1-veined, the apex broadly rounded, with minutely irregular margins; **lip** subovate, 6 mm long, 4 mm wide, the apex rounded, verrucose, loosely and sparsely fringed, the sides below the middle erect and rounded, the disc with a midline cleft, the base deeply concave to accommodate a thick, finger-like projection from the tip of the column-foot, attached to the base of the process; **column** stout, 2 mm long, the anther and stigma apical, the column-foot with extension 1.5 mm long.

PERU: **Ayacucho**: Huanta, lithophytic, alt. 3100-3200 m, 1-10 Feb. 1926, *A. Weberbauer 7510* (Holotype: AMES; Isotypes: F, US, W). Sine loc., cultivated in Howell, MI, by *Lynn O'Shaughnessy 01755* (MO), C. Luer illustr. 20420.

This species is vegetatively similar to the long-climbing species of *Xenosia*, but differs from them by a long-fimbriate lip that is concave at the base to accommodate a free extension of the tip of the column-foot.

Illustration: Fig. 47, herein, C. Luer illustr. 20420.

Masdevalliantha masdevalliopsis (Luer) Szlach. & Marg., Polish Bot. J. 46(2): 117, 2001.

Bas.: *Pleurothallis masdevalliopsis* Luer, Phytologia 44: 170, 1979.

Ety.: Named for the superficial similarity of the flowering plant to a species of *Masdevallia*.

Plant small, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 0.5-1 cm long, enclosed by 2 tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical-linear, narrowly obtuse, subpetiolate, 3-5 cm long, 0.4-0.5 cm wide, narrowed below into the subpetiolate base. **Inflorescence** a solitary flower borne by a slender peduncle 15-20 mm long, from the ramicaul below the apex; floral bract 5 mm long; pedicel 18-20 mm long; ovary 4 mm long with tall, undulating lamellae; **sepals** translucent greenish white, glabrous, carinate, the dorsal sepal ovate, concave, ca. 15 mm long, 8 mm wide, 3-veined, the apex acute, acuminate into a slender tail ca. 20 mm long, the lateral sepals narrowly ovate, acuminate into slender tails, 38 mm long, 4 mm wide, connate 4 mm, each 1-veined; **petals** translucent yellowish white, suborbicular-ovate, shortly unguiculate, 6.5 mm long, 4.5 mm wide, 1-veined; **lip** yellow-green, acutely deflexed at the middle into an apical blade, and a more or less oblong claw, the lip 5 mm long, 1.75 mm wide, the blade obovoid, verrucose, loosely and sparsely fringed, with the apex rounded, the margins below the middle erect, lobe-like, with a pair of flat calli and cleft between, the claw deeply concave to accommodate a finger-like projection from the tip of the column-foot, attached near the middle of the extension; **column** white, stout, 1.5 mm long, the anther and stigma apical, pollinia 2, long-caudate with one viscidium, the extension of the foot 2 mm long.

ECUADOR: **Loja**: Cordillera de Sabanilla, alt. ca. 2500 m, collected and cultivated by B. Malo at Tarqui, flowered in cultivation 12 Feb. 1979, *C. Luer 3965* (Holotype: SEL).

Superficially, this species appears deceptively similar to a small species of *Masdevallia* Ruiz & Pav. A single, relatively large, long-tailed flower is borne on a peduncle about as long as the narrow, clumped leaves from which it springs. The petals are membranous without a callus. The base of the lip is deeply concave to accommodate a finger-like extension of the tip of the column-foot.

Illustration: Icones-III: 46, 1986, Plate 20, C. Luer illustr. 3965.

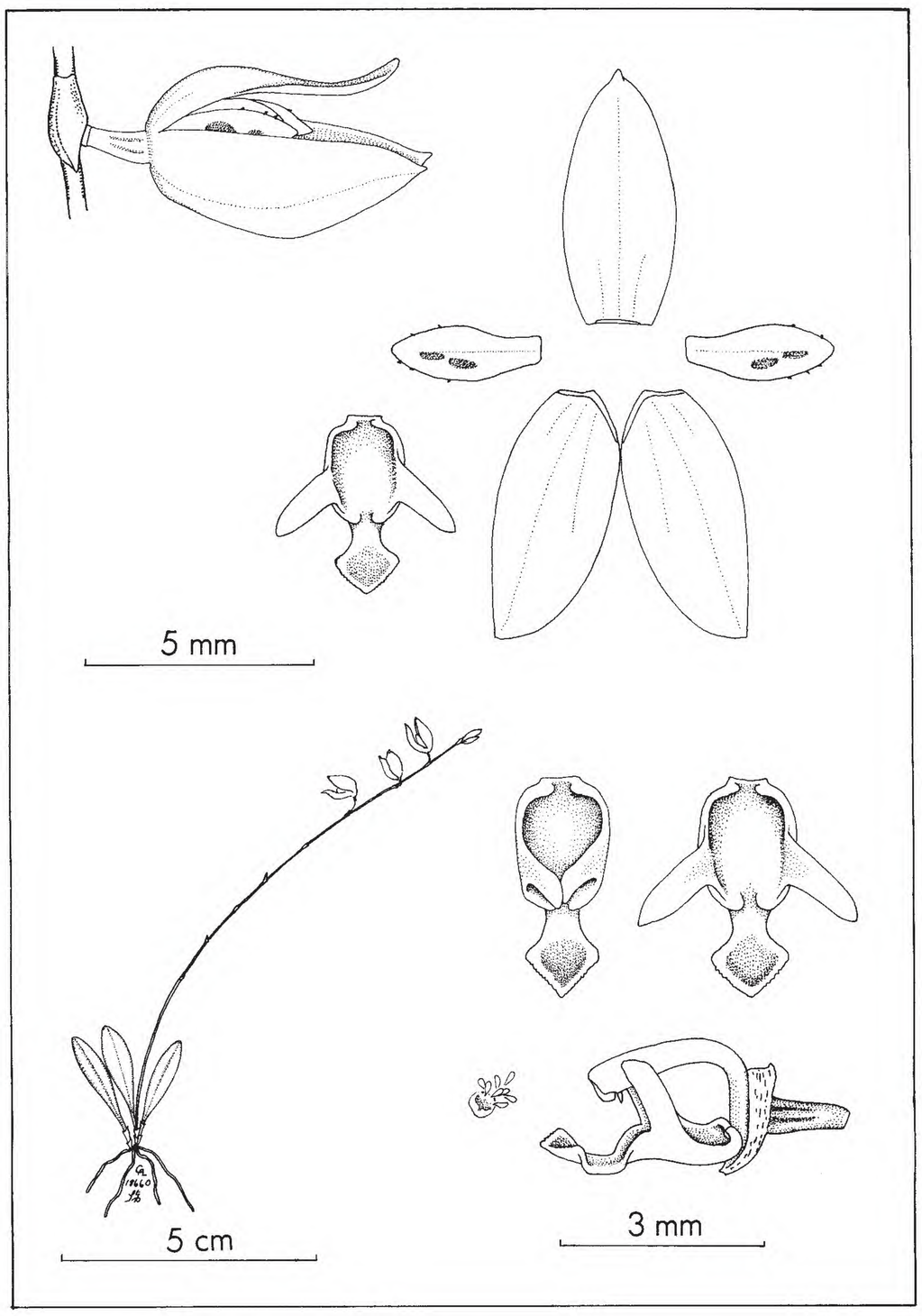


Fig. 40. Atopoglossum ekmanii

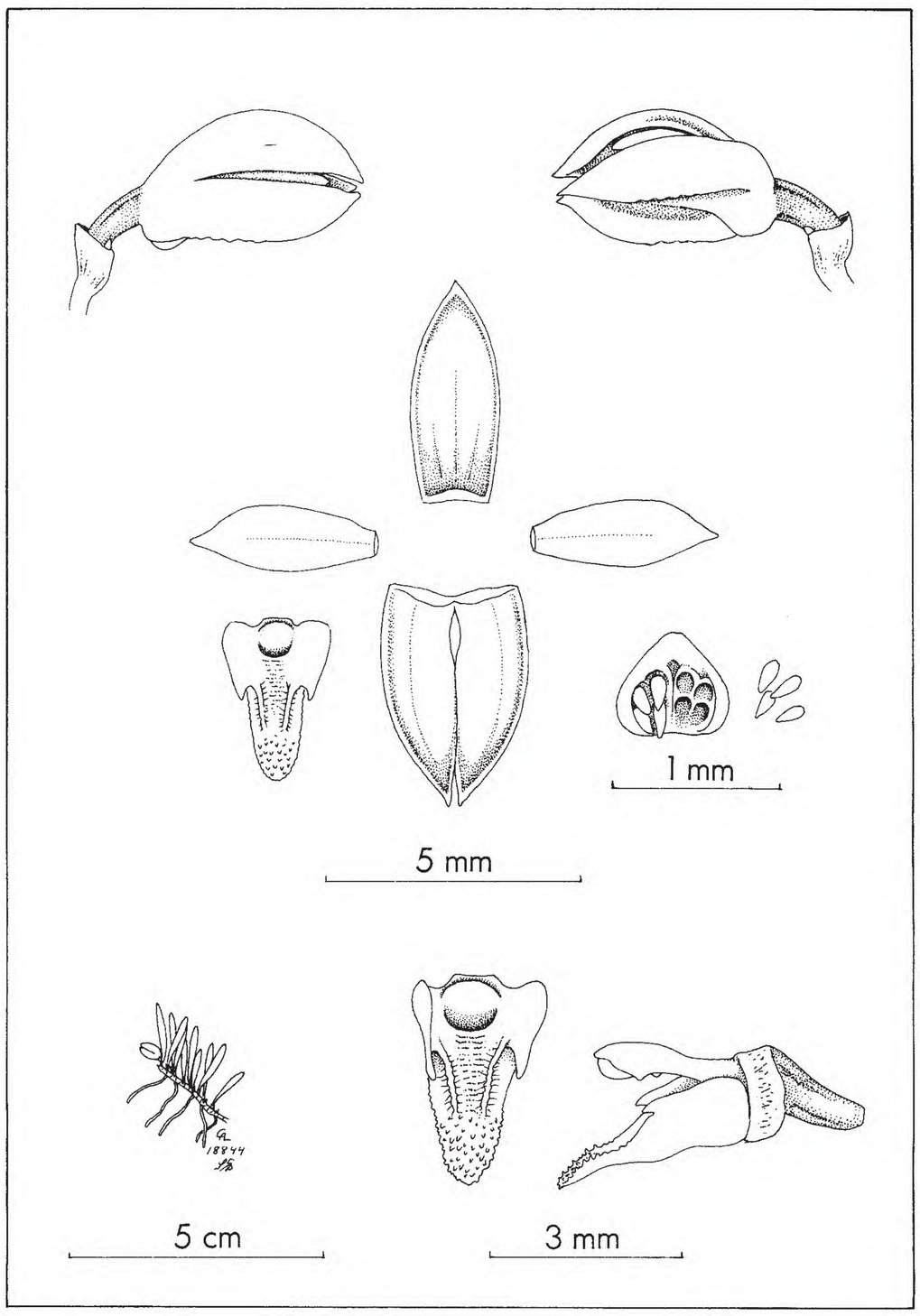


Fig. 41. Atopoglossum excentricum

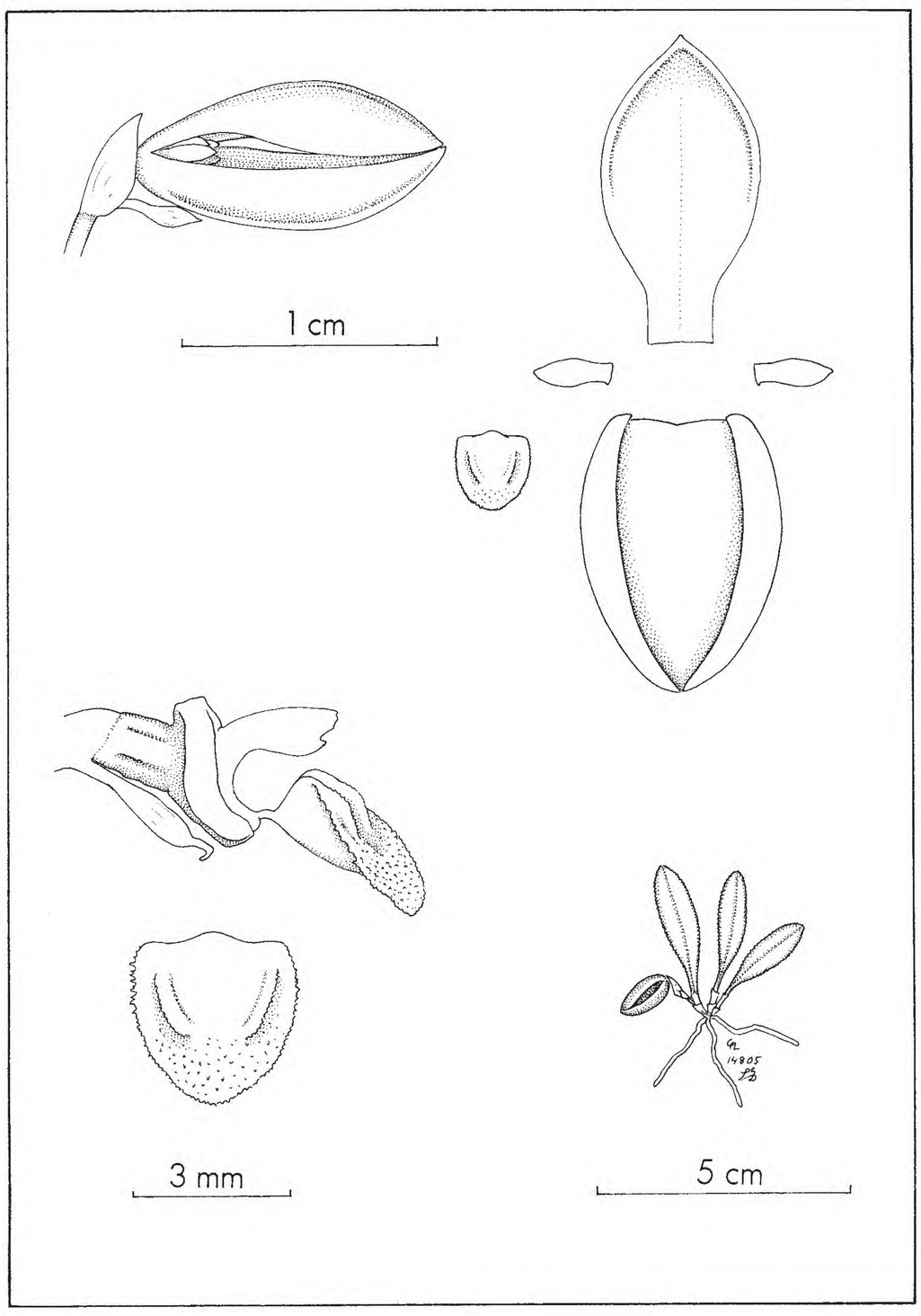


Fig. 42. Dondodia erosa

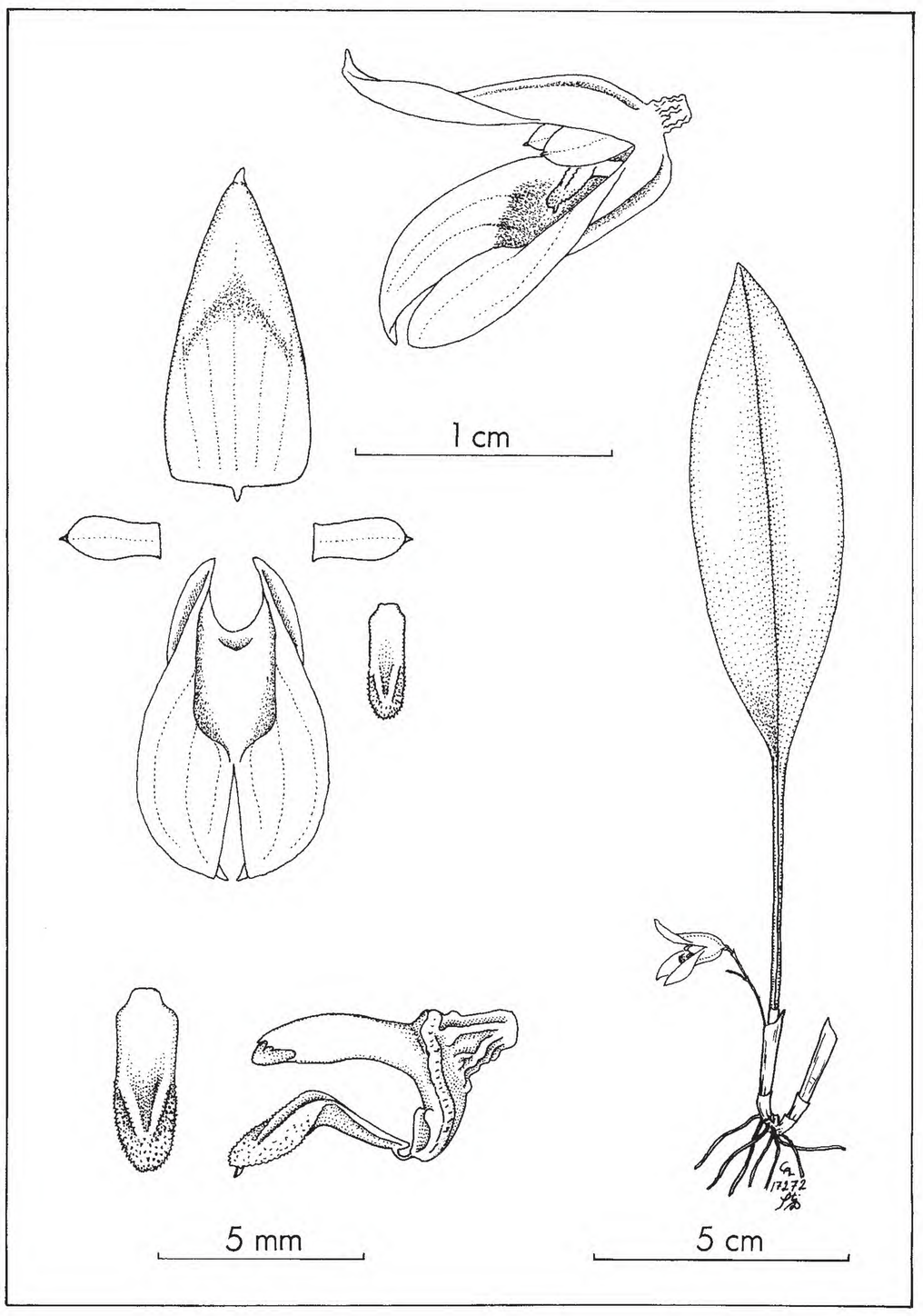


Fig. 43. Gerardoa montezumae

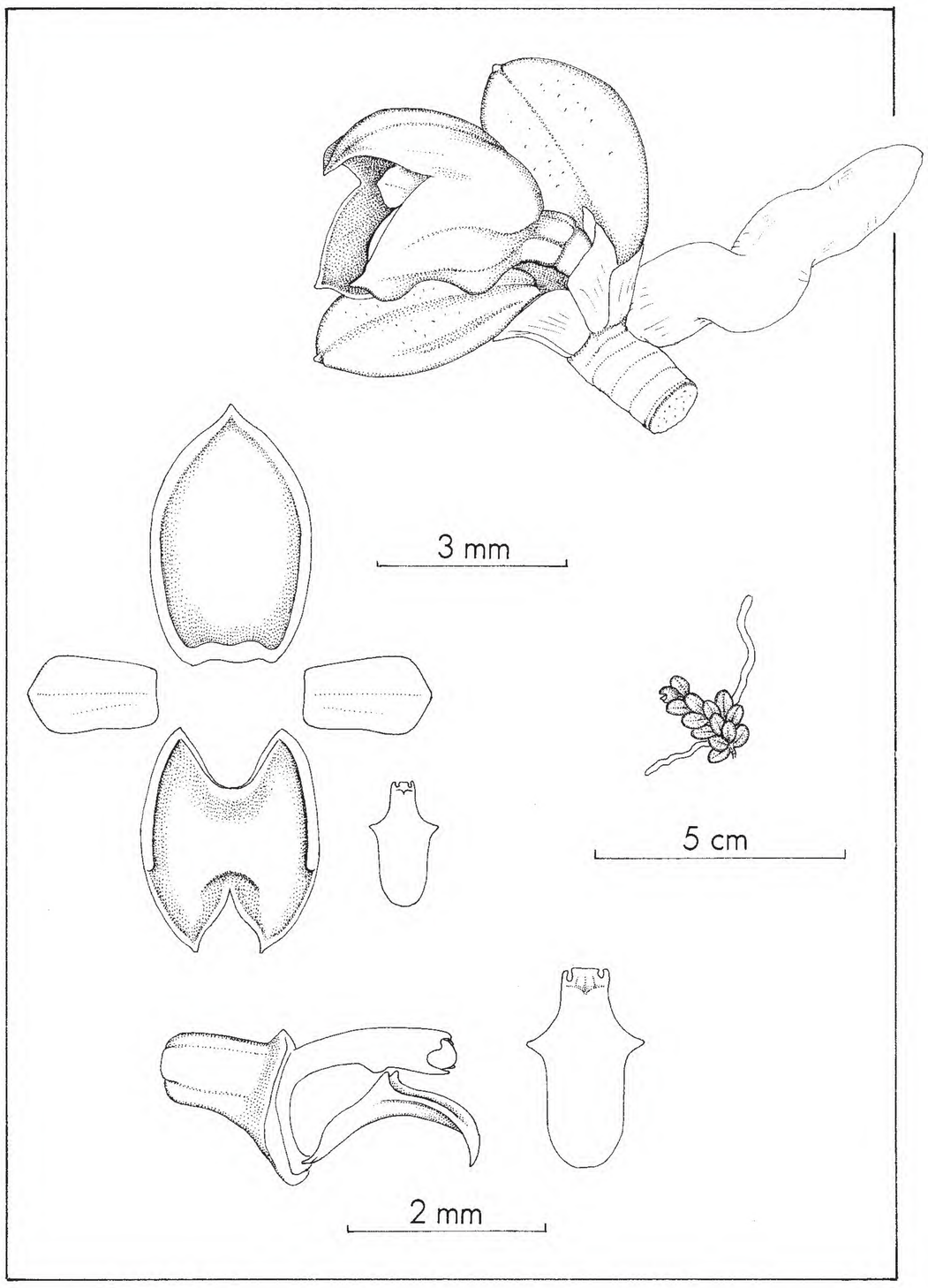


Fig. 44. Incaea yupanki

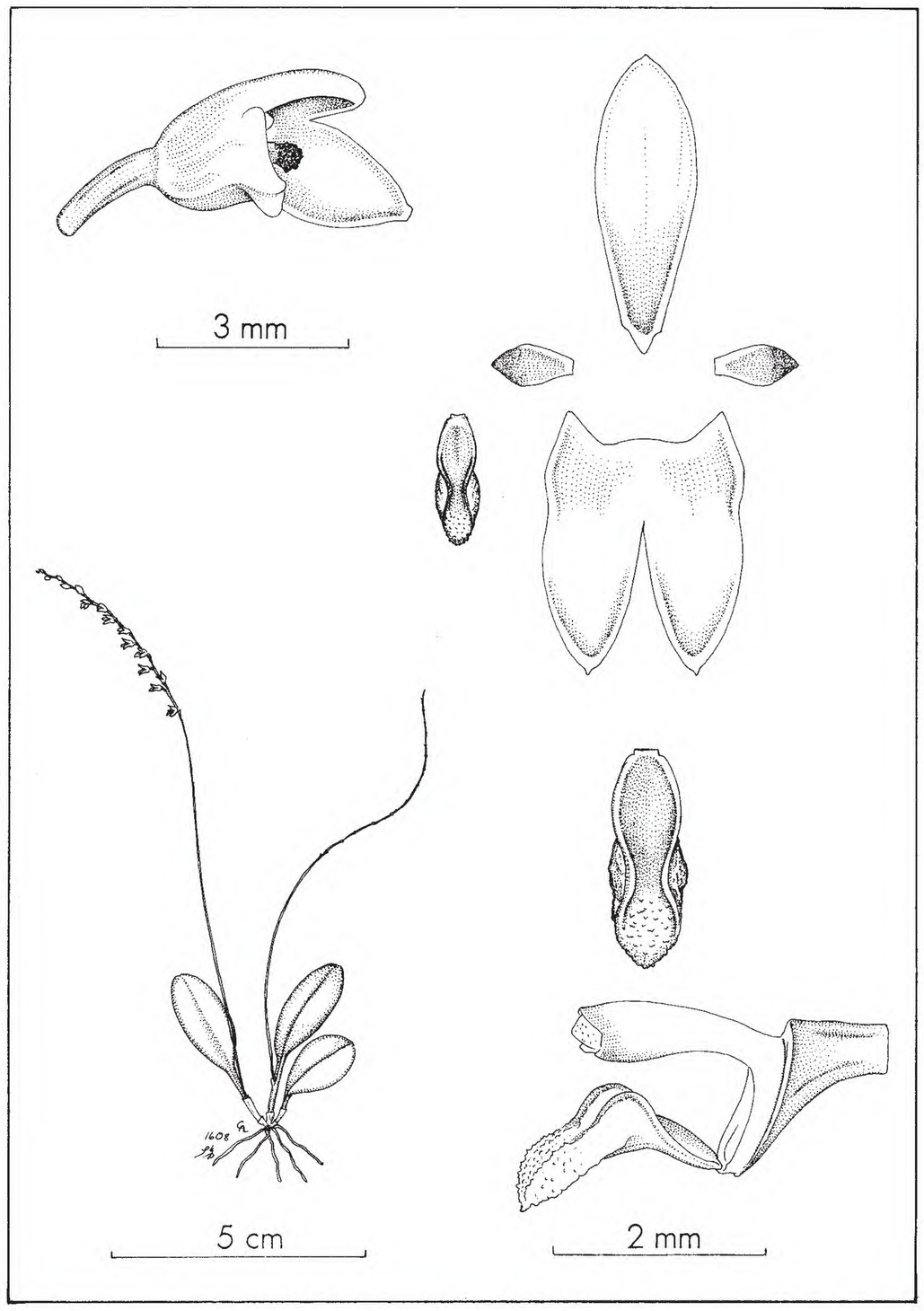


Fig. 45. Lomax punctulata

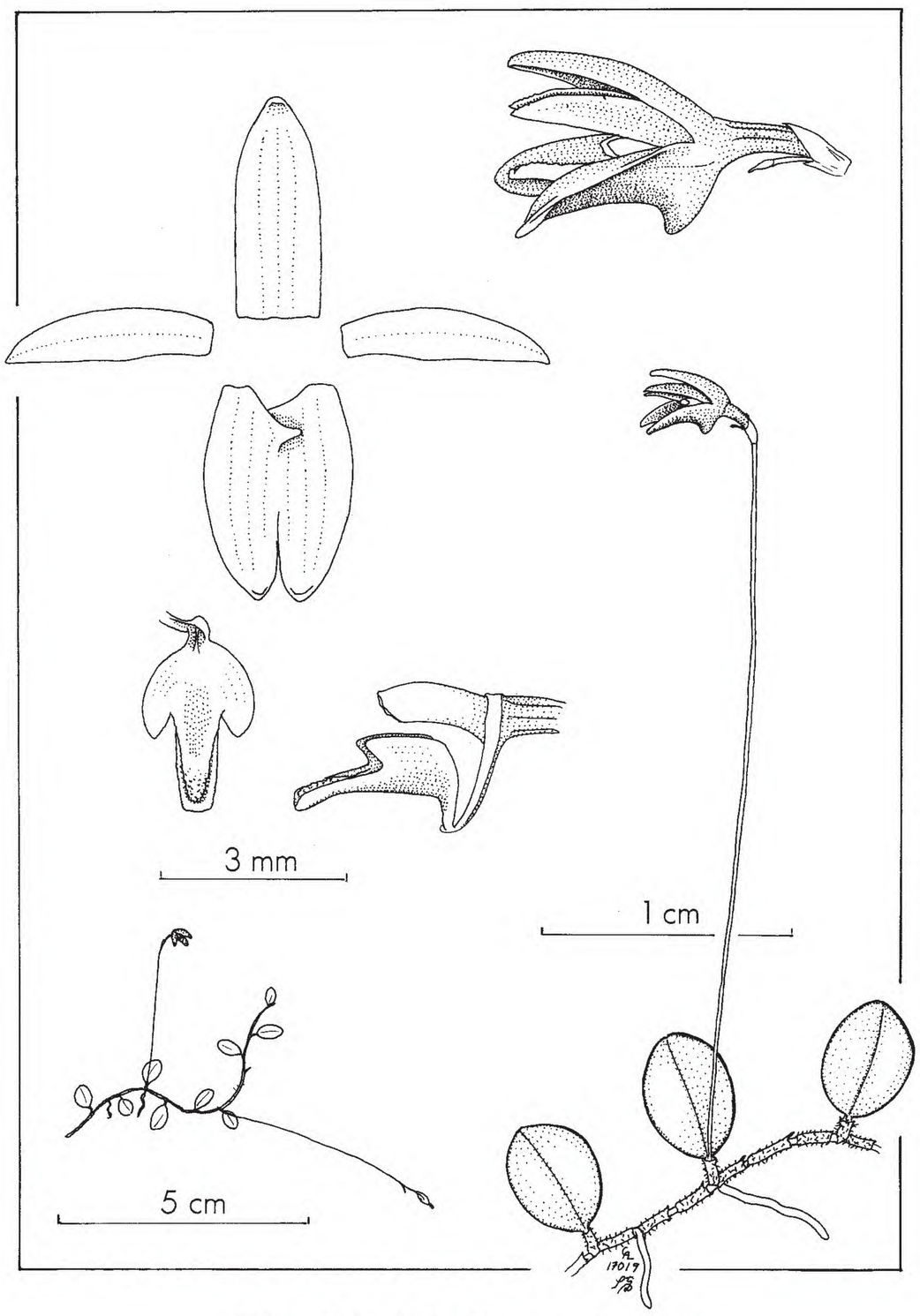


Fig. 46. Madisonia kerrii

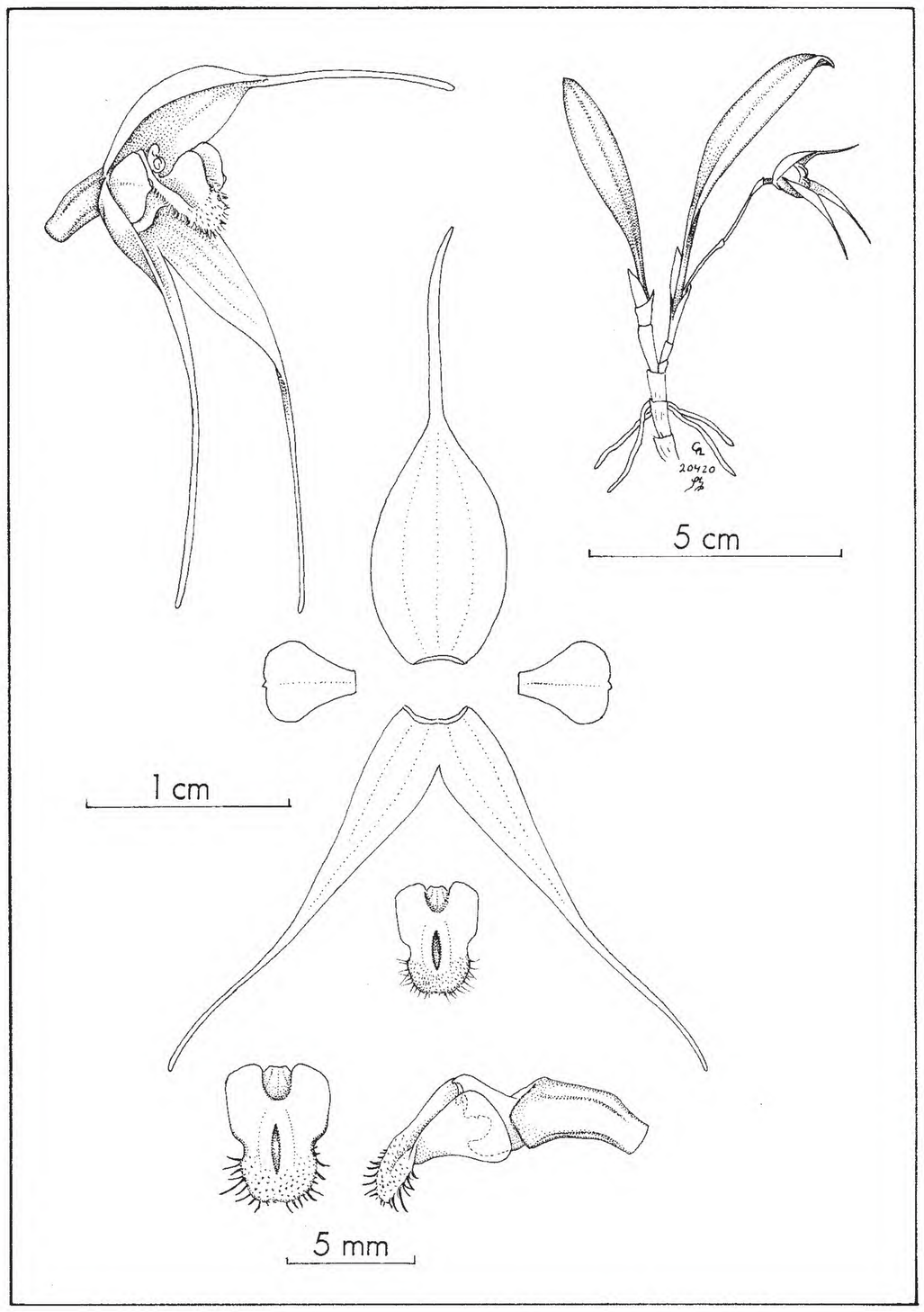


Fig. 47. Masdevalliantha longiserpens

MUSCARELLA

Muscarella (Luer) Luer, gen. nov.

Type: *Pleurothallis aristata* Hook., Ann. Mag. Nat. Hist. 1(2): 329, 1839.

Ety.: Sectional name from the Latin *muscarius*, "lots of flies," referring to the appearance of the racemes.

Racemi plerumque laxi. Sepala plerumque caudata. Petala denticulata fimbriataque.

Syn.: *Pleurothallis* subgen. *Specklinia* sect. *Muscariae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 89, 1986.

Plants small to very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect to ascending, much shorter than the leaf, never proliferating, with 1-3, imbricating, tubular sheaths below the middle and about the base. **Leaf** erect to suberect, coriaceous, narrowly elliptical or narrowly obovate, to elliptical, acute to obtuse, narrowed below to a subsessile or petiolate base. **Inflorescence** racemose, erect to creeping, usually loosely flowered, rarely densely flowered, usually successively flowered, shorter or longer than the leaf, produced with a small, inconspicuous spathe, below but near the apex of the ramicaul with an annulus; floral bracts tubular to infundibular; pedicels short to elongate; ovary tricarpellate, terete; **sepals** glabrous, ciliate, spiculate or pubescent, acute to acuminate, usually long-caudate, free from the base, or the laterals free from about the middle of the blade, with the apices diverging, 3-veined; **petals** membranous, elliptical, denticulate, serrate or fringed, acute to acuminate, usually caudate, sometimes clavate, 1-veined; **lip** entire to trilobed, ciliate, denticulate or fringed, the disc extremely variable, featureless to channeled between calli, the base more or less truncate, sometimes with a minute lobule at the corners, usually delicately hinged to the column-foot; **column** elongate, semiterete, with the margins narrowly winged if at all, the apex entire to denticulate, the anther ventral, deciduous, the rostellum and stigma ventral, the foot often with apical, pedestal-like calli, the pollinia 2, ovoid, free.

Previously treated in *Pleurothallis* R.Br., about 48 of these little species are found from Mexico through Central America and the Andes to Bolivia, and a few are known from the Antilles. Some tiny Antillean species with shortly fringed petals, i.e. *Muscarella delicatula* (Lindl.) Luer and *M. longilabris* (Lindl.) Luer may have closer relationship to *Specklinia* Lindl.

This genus is distinguished from *Specklinia* Lindl. and other vegetatively similar genera by a usually loose raceme with delicate flowers, with long-tailed sepals, and petals denticulate, fringed, or fimbriate. The raceme of *Muscarella marginata* (Rich.) Luer is congested, resembling a fascicle of pedicels. The lip of *Muscarella* is thick with variations of calli or cilia, and with a truncate base that is minutely lobulate at the corners, if at all. The column is slender and narrowly winged. Instead of calli, the column-foot is usually more or less concave to accommodate the lip, and the tip is often pedestal-like.

Species attributed to *Muscarella*

Muscarella ancora (Luer & Vásquez) Luer.....Fig. 48.
Muscarella aristata (Hook.) Luer.....Fig. 49.
Muscarella catoxys (Luer & Hirtz) Luer.....Fig. 50.
Muscarella cestrochila (Garay) Luer.....Fig. 51.
Muscarella claviculata (Luer & Hirtz) Luer.....Fig. 52.
Muscarella clavigera (Luer) Luer.....Fig. 53.
Muscarella coeloglossa (Luer & Hirtz) Luer.....Fig. 54.
Muscarella corynetes (Luer & Vásquez) Luer.....Fig. 55.
Muscarella cynocephala (Luer) Luer.....Fig. 56.
Muscarella delicatula (Lindl.) Luer.....Fig. 57.
Muscarella echinodes (Luer & R.Escobar) Luer.....Fig. 58.
Muscarella exesilabia (A.H.Heller & A.D.Hawkes) Luer.....Fig. 59.
Muscarella fimbriata (Ames & C.Schweinf.) Luer.....Fig. 60.
Muscarella fuchsii (Luer) Luer.....Fig. 61.
Muscarella furcatipetala (Luer & Hirtz) Luer.....Fig. 62.
Muscarella gongylodes (Luer) Luer.....Fig. 63.
Muscarella helenae (Fawc. & Rendle) Luer.....Fig. 64.
Muscarella herpestes (Luer) Luer.....Fig. 65.

Muscarella ichthyonekys (Luer) Luer.....Fig. 66.
Muscarella infinita (Luer & Hirtz) Luer.....Fig. 67.
Muscarella intonsa (Luer & R.Escobar) Luer.....Fig. 68.
Muscarella kennedyi (Luer) Luer.....Fig. 69.
Muscarella latilabris (Foldats) Luer.....Fig. 70.
Muscarella lipothrix (Luer) Luer.....Fig. 71.
Muscarella llamachoi (Luer) Luer.....Fig. 72.
Muscarella longilabris (Lindl.) Luer.....Fig. 73.
Muscarella macroblepharis (Rchb.f.) Luer.....Fig. 74.
Muscarella marginata (Rich.) Luer.....Fig. 75.
Muscarella megalops (Luer) Luer.....Fig. 76.
Muscarella oblonga (Luer & Hirtz) Luer.....Fig. 77.
Muscarella perangusta (Luer) Luer.....Fig. 78.
Muscarella quinquiseta (Ames) Luer.....Fig. 79.
Muscarella rojohnii Luer.....Fig. 80.
Muscarella samacensis (Ames) Luer.....Fig. 81.
Muscarella schudelii (Luer) Luer.....Fig. 82.
Muscarella semperflorens (Lindl.) Luer.....Fig. 83.
Muscarella sibatensis (Lehm. & Kraenzl.) Luer.....Fig. 84.
Muscarella strumosa (Ames) Luer.....Fig. 85.
Muscarella stumpflei (Luer) Luer.....Figs. 86a, 86b.
Muscarella tamboënsis (Luer & R.Escobar) Luer.....Fig. 87.
Muscarella tempestalis (Luer) Luer.....Fig. 88.
Muscarella trullifera (Luer & Hirtz) Luer.....Fig. 89.
Muscarella tsubotae (Luer & R.Escobar) Luer.....Fig. 90.
Muscarella villosilabia (Luer & Hirtz) Luer.....Fig. 91.
Muscarella werneri Luer.....Fig. 92.
Muscarella xanthella (Luer) Luer.....Fig. 93.
Muscarella xyloura Luer & Hirtz.....Fig. 94.
Muscarella zephyrina (Rchb.f.) Luer.....Figs. 95a, 95b, 95c.

Muscarella ancora (Luer & R.Vásquez) Luer, comb. nov.

Bas.: *Pleurothallis ancora* Luer & R.Vásquez, Phytologia 46: 357, 1980.

Ety.: From the Latin *ancora*, "an anchor," referring to the shape of the lip.

Syn.: *Specklinia ancora* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-8 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 10-35 mm long including the a slender petiole 8-18 mm long, 3-5 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, flexible, lightly flexuous, loose, successively several-flowered raceme, up to 9 cm long including the filiform peduncle 4-5 cm long, borne laterally from the ramicaul; floral bract 0.75-1 mm long; pedicel slender, 6 mm long below to 2 mm long above; ovary 1 mm long; **sepals** translucent yellow or pale purple with the midvein purple, glabrous, carinate, ovate in the basal third, the apex acute and long-attenuate, the dorsal sepal 10 mm long, 1.75 mm wide, the lateral sepals oblique, 10 mm long, 2 mm wide, connate 0.5 mm; **petals** translucent with a purple midvein, ovate, long-lacerate, the apex long-acuminate with the tail filiform, 7 mm long, 1.5 mm wide; **lip** purple-black, oblong-trilobed, 3 mm long, 1.5 mm wide across the basal lobes, the apex obovoid, suborbicular, convex, with long-ciliate margins, the sides above the base with large, erect, forwardly directed, falcate lobes, the disc deeply cleft centrally between a pair of calli, pubescent within the cleft, the base concave, subtruncate, hinged to the column-foot; **column** terete, 2 mm long, the anther, rostellum and stigma ventral, the foot thick, less than 0.5 mm long.

BOLIVIA: **Cochabamba**: epiphytic in cloud forest along the road to Tablas, alt. 2300 m, 9 Feb. 1980, *C. Luer, J. Luer & R. Vásquez 5172* (Holotype: SEL); same collection data, *C. Luer 5168* (SEL).

This species is apparently endemic in central Bolivia in the narrow band of wet forest between the cold Alto Plano and the hot lowlands. Vegetatively, it is indistinguishable from the other species of the genus. The sepals are long-caudate; the petals are deeply lacerate with a long-setiform apex. The lip is trilobed with the black apex convex and long-ciliate, and a pair of large, uncinate lobes above the base. The disc is deeply cleft centrally with the cavity pubescent.

Muscarella aristata (Hook.) Luer, comb. nov.

Bas: *Pleurothallis aristata* Hook., Ann. Mag. Nat. Hist. 1(2): 329, 1839.
Ety.: From the Latin *aristatus*, "bristle-like," referring to the sepals.

Syn.: *Pleurothallis barberiana* Rchb.f., Gard. Chron. n.s.16: 6, 1881.
Ety.: Named for Mr. J. Barber of Upper Clapton, England, in whose collection this species flowered.

Syn.: *Pleurothallis urbaniana* Rchb.f., Ber. Deutsch. Bot. Ges. 3: 297, 1885.
Ety.: Named for I. Urban, editor of *Symbolae Antillanae*.

Syn.: *Humboldtia aristata* (Hook.) Kuntze, Rev. Gen. Pl. 2: 667, 1891.
Syn.: *Humboldtia barberiana* (Rchb.f.) Kuntze, Rev. Gen. Pl. 2: 667, 1891.

Syn.: *Pleurothallis dichotoma* Ames, Sched. Orch. 6: 58, 1923, not (Poepp. & Endl.) Schltr. 1921.
Ety.: From the Latin (Greek) *dichotomus*, "divided in pairs," falsely alluding to the raceme.

Syn.: *Pleurothallis divexa* Ames, Sched. Orch. 7: 20, 1924, replaced name for *P. dichotoma* Ames, 1923.
Ety.: From the Latin *divexus*, "torn asunder," alluding to the misnomer *dichotoma*.

Syn.: *Specklinia aristata* (Hook.) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-8 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 10-35 mm long including the a slender petiole 8-10 mm long, 3-6 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, flexible, lightly flexuous, loose, successively several-flowered raceme, up to 9 cm long including the filiform peduncle 4-5 cm long, borne laterally from the ramicaul; floral bract 1-1.5 mm long; pedicel slender, 12 mm long below to 4 mm long above; ovary 1.5 mm long; **sepals** translucent, suffused and veined in purple, glabrous, carinate, ovate in the basal half, the apex acute, long-attenuate, the dorsal sepal 7-10 mm long, 1.25-3 mm wide, the lateral sepals oblique, 6.5-9.5 mm long, 1.25-1.5 mm wide, connate 1-1.5 mm; **petals** translucent, elliptical-ovate, ciliate-lacerate, the apex acute, 3-4 mm long, 0.6-1 mm wide; **lip** yellow, dark purple toward the apex, oblong, obscurely trilobed, the apex convex, papillose, 2.5-3.25 mm long, 1-1.5 mm wide, with the margins revolute and meeting beneath, with a longitudinal fin-like callus beneath below the middle, the disc below the middle with the margins erect, broadly obtuse, with a pair of low calli within the marginal angles and coursing forward to the middle, with a shiny, oval patch in the center, the base truncate, minutely bilobulate, hinged to the column-foot; **column** terete, 2 mm long, variously dentate at the apex, the anther, rostellum and stigma ventral, the foot thick, 0.5 mm long, dark purple, long.

Representative collections:
GUYANA: Demerara, *Parker s.n.* (Holotype: K); sine loc., 1898, *E.F. im Thurn 145* (K); Bartica-Potaro road, 17 Aug. 1937, *N. Y. Sndwith 1103* (K); Upper Mazaruni District, Saydak Creek, adjacent to Eboropu Mountain, alt. 470 m, 12 Apr. 1979, *P.J. Edwards 1267* (K).
SURINAME: Brownsberg, collected by R. Determann, 18 Apr. 1981, flowered in cultivation 14 Feb. 1982, *C. Luer 6830* (SEL).
FRENCH GUIANA: Montagne de Kaw, alt. 300 m, 12 May 1986, *C. Luer & J. Luer 12227* (K, MO); Barrage de Petit Saut, Bassin du Sinnmary, alt. 50 m, 21 June 1994, *G. Cremers 13320* (CAY).
VENEZUELA: **Miranda**: Parqué Nacional de Guatopo, File Chivato Negro, alt. 610-710 m, 29 Nov. 1961, *J.A. Steyermark 90162* (AMES, VEN).
PUERTO RICO: near Maricao, from Indiera Fria, 3 Dec. 1884, *P. Sintenis 503* (holotype of *P. urbaniana*: W; Isotype: US); near Adjuntas, Monte Guaraguo, 13 May 1886, *P. Sintenis 4365* (AMES, BR, K); near Utucido at Boncador, 16 Mar. 1887, *P. Sintenis 6527* (BR, C, NY, US, W). Mount Morales, near Utuado, 19 Mar. 1906, *E.G. Britton & D. Marble 1229* (NY).
HAITI: Massif du Nord, Morne Colombeau, alt. 900 m, 20 June 1925, *E.L. Ekman 4357* (AMES, K, S, US).
DOMINICAN REPUBLIC: Peninsula de Pamana, Laguna at Los Banaderos, alt. 500 m, 28 May 1930, *E.L. Ekman 15140* (AMES, S). Puerto Plata, Loma del Puerto, alt. 750 m, 18 Sept. 1969, *A.H. Liogier 15923* (AMES, NY).
GUADELOUPE: Bois de Pigeon, alt. 500-1000 m, 1893, *P. Duss 3341* (MO, NY, US); Trois Rivieres, alt. 400 m, 29 Sept. 1936, *H. Stehlé 1244* (NY); Dugommier, alt. 800 m, 5 Dec. 1936, *H. Stehlé 1295* (AMES, NY).
MARTINIQUE: environs des Deux Choux, 1880, *P. Duss 3956* (NY); Bois des Deux, Choux a Carbet, alt. 800 m, 5 Sept. 1937, *H. Stehlé 2206* (NY).
DOMINICA: sine loc., *Henslow s.n.* (K); sine loc., 1 Mar. 1880, *Eggers 90* (C, K); alt. 700 m, Jan. 1882, *Eggers 99-6* (W); sine loc., *Dr. Imray s.n.* (K); sine loc., 25 Apr. 1888, *G.A. Ramage s.n.* (K); Laudat, 1903, *F.E. Lloyd 57* (AMES, NY).
ST. LUCIA: Savanna Edmund District, southeast of Piton Troumassée, alt. 1,800-2,000 ft., 21 Nov. 1960, *G.R. Proctor 21590* (AMES, BM).

COSTA RICA: sine loc., ca. 1867, *A. Endres 58* (W); Cartago: Peralta, alt. 1,200 ft., 13 July 1923, *C.H. Lankester 464* (holotype of *P. dichotoma*: AMES). Sine loc., ca. 1869, *A. Endres 58 (548)* (W).
ECUADOR: **Pichincha**: Nanegal, *Jameson s.n.* (W); Anguí, western slope near Quito, alt. 1000 m, 29 Nov. 1880, *F.C. Lehmann 355* (W). **Napo**: Río Jatunyacu, above Shandia, alt. 650 m, 12 Mar. 1991, *A. Hirtz & S. Ortega 5365* (MO). **Pastaza**: south of Puyo toward Macas, alt. 950 m, *C. Luer, J. Luer & A. Hirtz 19555* (MO). **Morona-Santiago**: Cord. del Cutucú, between Morona and Mendez, alt. 950 m, 17 Jan. 1989, *C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 13954* (MO). **Zamora-Chinchipe**: between Loja and Zamora, alt. 1400 m, collected by F. Fuchs, flowered in cultivation 1974, *C. Luer 122* (SEL); Cord. del Condor, Paquisha, alt. 950 m, 11 Feb. 1993, *S. Dalström, T. Höijer, & H. Wanntorp 1888* (MO).
PERU: **Huánuco**: Tingo Maria, collected by Janet Kuhn Feb. 1975, flowered in cultivation 1977, *C. Luer 2899* (SEL); near Tingo Maria, 1998, cultivated at Venhuizen, *A.P. Sijm 210311* (MO).
BOLIVIA: **La Paz**: Larecaja, above Tipuani, alt. 1150 m, 29 Aug. 1991, *C. Luer, J. Luer et al. 15376* (MO); Nor Yungas, Bella Vista, collected Aug. 1991, flowered in cultivation in Quito, May 1992, *A. Hirtz 5798* (MO). **Cochabamba**: road to Villa Tunari, flowered in cultivation 21 May 1979, *C. Luer 4065A* (SEL).
Sine loc., imported by H. Low, flowered May 1881, *J. Barber, s.n.* (holotype of *P. barberiana*: W).

This species is relatively frequent in its wide distribution through Central America, the Antilles, and the Andes. Vegetatively not remarkable, it is distinguished from all the others by the loose, flexuous raceme of successive flowers with long-tailed sepals; fringed petals with the apex merely acute, not acuminate; and a distinctive lip with a dark purple, convex, papillose apex, and a well-defined, oval, shiny structure in the center of the disc.

Muscarella catoxys (Luer & Hirtz) Luer, comb. nov.

Bas: *Pleurothallis catoxys* Luer & Hirtz, Lindleyana 11: 151, 1996.

Ety.: From the Greek *katoxys*, "sharply pointed," referring to all six floral parts.

Syn.: *Specklinia catoxys* (Luer & Hirtz), Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-6 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 15-20 mm long including the petiole 5-8 mm long, 4-5 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, loose, flexible, flexuous, successively several-flowered raceme, up to 6 cm long including the filiform peduncle 2-4 cm long, borne laterally from the ramicaul; floral bract 1 mm long; pedicel slender, 5-7 mm long; ovary, 0.75-1 mm long; **sepals** translucent rose, glabrous, carinate, the dorsal sepal narrowly ovate, acute, long-attenuate, 8 mm long, 1.25 mm wide, the lateral sepals narrowly ovate, oblique, acute, long-attenuate, 10 mm long, 1.5 mm wide, connate 0.5 mm; **petals** translucent rose, ovate in the basal fourth, lacerate, acute, long-acuminate, 8 mm long, 1.25 mm wide; **lip** purple, obovate-subpandurate, 5 mm long, 1.4 mm wide, minutely denticulate, the apex acute, long-acuminate, the base with a pair of small, erect, rounded lobes, the disc with a shallow, elliptical cavity below the middle, pubescent within, between a low pair of calli extending forward from the basal lobes, and another cavity above the base, the base hinged to the column-foot; **column** terete, 1.75 mm long, the anther, rostellum and stigma ventral, the foot 0.5 mm long, concave between a pair of small, rounded calli.

ECUADOR: **Pastaza**: epiphytic in cloud forest along Río Zuñag, alt. 2,400 m, 23-28 Feb. 1990, *A. Hirtz et al. 4635* (Holotype: MO).

This species is known from only one collection from eastcentral Ecuador. It is distinguished by the small habit with loose racemes of flowers with long-tailed sepals and petals. The apex of the minutely denticulate lip is long-acuminate.

Muscarella cestrochila (Garay) Luer, comb. nov.

Bas.: *Pleurothallis cestrochila* Garay, Orquideología 8: 180, 1973.

Ety.: From the Greek *Kestrochilos*, "a hammer-like lip," referring to the shape of the lip.

Syn.: *Specklinia cestrochila* (Garay) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-6 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, petiolate, subacute to obtuse, 10-20 mm long including the petiole 4-5 mm long, 3-5 mm wide, the base cuneate into the petiole. **Inflorescence** an erect, flexible, flexuous, loose, successively several-flowered raceme, up to 6 cm long including the filiform peduncle 2-3 cm long, borne laterally from the ramicaul; floral bract 1.5 mm long; pedicel slender, 3-4 mm long; ovary, 1.75 mm long; **sepals** translucent red-purple, carinate, with the ribs and margins sparsely denticulate, the apices acute with long-acuminate tails, sometimes thickened toward the tip, the

dorsal sepal narrowly triangular, 7-10 mm long, 0.8 mm wide, the lateral sepals ovate below the middle, oblique, 6-10 mm long, 1.8 mm wide, connate 0.5 mm; **petals** translucent rose, narrowly ovate in the basal fourth, long ciliate-lacerate, acute, long-acuminate, 5-6 mm long, 0.5 mm wide exclusive of the fringe; **lip** purple-black to orange, obovate-subpandurate, 3.5 mm long, 1.6 mm wide, the apex broadly rounded, cellular-papillose, with minutely denticulate margins, with an erect pair of small, marginal, falcate lobes on the lower third, the disc with a pair of minutely denticulate calli from the marginal lobes to the middle, the apex rounded, the base narrow, truncate, minutely bilobulate, hinged to the column-foot; **column** slender, semiterete, 2 mm long, the anther, rostellum and stigma ventral, the foot concave between a pair of triangular calli.

COLOMBIA: **Antioquia**: El Retiro, road to Las Palmas, alt. 2500 m, without date, collected by Gustavo Wills, *R. Escobar 715* (Holotype: AMES); same area, collected by J. Lopez, flowered in cultivation at Colomborquídeas, 29 Dec. 1992, *R. Escobar 5136* (MO). **Nariño**: near Magnesium mines above Ricaurte, alt. 1800 m, 1 Nov. 1979, *C. Luer. J. Luer & A. Hirtz 4509* (SEL).
ECUADOR: **Carchi**: east of pass east of Maldonado, alt. 2300 m, 17 Mar. 1991, *C. Luer, J. Luer, J. del Hierro, A. & X. Hirtz 15148* (MO); at pass above Maldonado, alt. 2450 m, 15 Jan. 1992, *C. Luer, J. Luer, A. & P. Jesup 16035* (MO); above Maldonado, alt. 2600 m, 23 Nov. 1999, *A. Hirtz et al. 7152* (MO). **Sucumbíos**: between La Bonita and Rosa Florida, alt. ca. 2000 m, 14 Mar. 1996, *S. Dalström, S. Ingram & K. Ferrell-Ingram 2135* (MO). **Napo**: between Cotundo and Coca, alt. 1300 m, 1 Nov. 1999, *A. Hirtz & X. Hirtz 7099* (MO).

This species is widely distributed in the western and the central cordilleras of Colombia and Ecuador. It is characterized by the small habit; a loose raceme of successive flowers; sepals with long tails that may or may not be thickened toward the tips; petals long-fimbriate on the lower third with the distal third a filamentous tail; and a lip, purple-black to orange, with a rounded apex and a pair of small, erect, hook-like lobes below the middle.

Muscarella claviculata (Luer & Hirtz), Luer, comb. nov.

Bas.: *Pleurothallis claviculata* Luer & Hirtz, Lindleyana 11: 153, 1996.

Ety.: From the Latin *claviculatus*, "with small clubs," referring to the sepals and petals.

Syn.: *Specklinia claviculata* (Luer & Hirtz), Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, obtuse, 2-3 cm long including the petiole 0.6-1 cm long, 0.5-0.6 cm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, loose, successively several-flowered raceme, up to 5 cm long including the filiform peduncle ca. 2.5 cm long, borne laterally from the ramicaul; floral bract 2 mm long; pedicel slender, 4-6 mm long; ovary 1 mm long; **sepals** translucent yellow with purple dots, glabrous, the dorsal sepal narrowly triangular, tricarinate, acute, long-attenuate with the tip clavate, 17 mm long, 1.5 mm wide, the lateral sepals ovate, oblique, bicarinate, acute, long-attenuate with the tip clavate, 17 mm long, 3 mm wide, connate 1 mm; **petals** translucent yellow with a purple midvein, ovate, acute, long-acuminate with the tip clavate, 9 mm long, 1 mm wide, the margins above the base long-fimbriate; **lip** purple-black, oblong-pandurate, 5 mm long, 3 mm wide, the anterior portion suborbicular, cellular-papillose, the sides above the base with erect, low, rounded lobes, the disc with a thick pair of calli extending forward from the basal lobes, with a finlike callus on the undersurface below the middle, the base membranous with a microscopic pair of lobules, hinged to the column-foot; **column** terete, 3.5 mm long, the anther, rostellum and stigma ventral, the foot 1 mm long, concave between a pair of subacute calli.

ECUADOR: **Pastaza**: epiphytic in cloud forest along Río Zuñag, alt. 2,400 m, 23-28 Feb. 1990, *A. Hirtz et al. 4635* (Holotype: MO); Río Zuñag, alt. 2200 m, collection of E. Sánchez, Aug. 1990, *A. Hrtz 5085* (MO).

This species from eastcentral Ecuador, is distinguished from the other members of the genus by the small, oblanceolate leaves; a twice longer, flexuous, successively flowered raceme; long-caudate sepals thickened at the tips of the filamentous tails; long-fimbriate petals with a filamentous, clavate apex similar to the sepals; and a purple-black, pyriform, subpandurate lip with a rounded apex and obtuse angles below the middle.

Muscarella clavigera (Luer) Luer, comb. nov.

Bas.: *Pleurothallis clavigera* Luer, Selbyana 3: 268, 1977.

Ety.: From the Latin *claviger*, "club bearing," referring to the sepals.

Syn.: *Specklinia clavigera* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-7 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 20-35 mm long including the petiole 5 mm long, 3-5 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** a fascicle of successive flowers borne by an erect, filamentous peduncle, 30-40 mm long, borne laterally from the ramicaul; floral bract 2-3 mm long; pedicels slender, 4-8 mm long; ovary 3 mm long; **sepals** translucent pale yellow-green with lines of purple markings, carinate, sparsely denticulate on the margins and ribs, the dorsal sepal ovate below the middle, acute, contracted into a slender tail clavate at the tip, 8-9.5 mm long, 2 mm wide, the lateral sepals oblong below the middle, acute, contracted into a slender tail clavate at the tip, 8-9.5 mm long, 1.8 mm wide, connate 1 mm; **petals** translucent yellow, narrowly ovate, acute, sparsely ciliate, 3-3.5 mm long, 0.5 mm wide; **lip** light green, spotted with purple, obovate, thick, 3-4 mm long, 2 mm wide, the apex convex, broadly rounded, long-ciliate, the sides above the base with erect, obtuse lobules, the disc with an oval, shiny patch, between a thick pair of calli extending forward from the basal lobes, with a finlike callus on the undersurface below the middle, the base concave above the base, minutely bilobulate, hinged to the column-foot; **column** semiterete, 2 mm long, the anther, rostellum and stigma ventral, the foot 0.5 mm long, bulbous.

ECUADOR: sine loc., purchased by Roberto Estrada from a collector, flowered in cultivation in Guayaquil, 24 Feb. 1977, *C. Luer 1468* (Holotype: SEL). **Morona-Santiago**: Río Calagras, collected by C. Luer et al., flowered in cultivation 21 Mar. 1981, *C. Luer 5890* (SEL).

This species is probably endemic on the eastern slopes of the Andes of southern Ecuador. It is distinguished from the other members of the genus by the small oblanceolate leaves; a fascicle of successive flowers borne near the tips of the leaves; sepals with caudate-clavate apices; short, acute, sparsely ciliate petals; and a thick lip with a convex, rounded, ciliate apex, and small, basal lobes. An oval, shiny patch below the middle is similar to that of *Muscarella aristata* (Hook.) Luer.

Muscarella coeloglossa (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis coeloglossa* Luer & Hirtz, Lindleyana 11: 154, 1996.

Ety.: From the Greek *coeloglossa*, "a hollow tongue," referring to the cavity of the lip.

Syn.: *Specklinia coeloglossa* (Luer & Hirtz), Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 5-10 mm long including a petiole 1-2 mm long, 3-5 mm wide, the base cuneate into the base. **Inflorescence** an erect, loose, successively several-flowered raceme, up to 4 cm long including the filiform peduncle 1-1.5 cm long, borne laterally from the ramicaul; floral bract 1 mm long; pedicel slender, 1-2 mm long; ovary, 0.75 mm long; **sepals** translucent yellow, carinate with the carinae minutely erose, thickened at the apices, the dorsal sepal elliptical, acute, 3.75 mm long, 1.5 mm wide, 3-veined, the lateral sepals oblong, oblique, acute, 3.75 mm long, 1.5 mm wide, 2-veined, essentially free; **petals** translucent yellow, glabrous, elliptical-obovate, acute, apiculate, 2.5 mm long, 1 mm wide, the margins shortly lacerate; **lip** red-purple, trilobed, 2.25 mm long, 0.5 mm wide, 2 mm wide expanded, the anterior lobe obovate, cellular-glandular, the apex rounded, the lateral lobes below the middle, erect, broadly rounded, the disc with an ovate ostium near the center that leads into a comparatively large cavity, the base with a smaller, midline cavity, and with a minute pair of slender lobules, hinged to the column-foot; **column** terete, 1.5 mm long, the anther and rostellum subapical, the stigma ventral, the foot 0.5 mm long, concave.

ECUADOR: **Morona-Santiago**: epiphytic in cloud forest north of Gualaquiza, alt. 1,700 m, 17 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11880* (Holotype: MO); Cordillera del Condor, epiphytic in forest east of Guismé, alt. 1,750 m, 21 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13548* (MO); forest north of Gualaquiza, alt. 1900 m, 7 Mar. 1992, *S. Dalström 1626* (MO). Río Paute near Guarumales, alt. 2000 m, 20 Oct. 1999, *A. Hirtz & E. Sánchez 7010* (MO).
PERU: **Junín**: east of La Merced, Chanchamayo, alt. 1400 m, collected July 2000 by P. Cloes s.n., *C. Luer 19414* (MO).

This species, closely related to *Muscarella exesilabia* (A.H.Heller & A.D. Hawkes) Luer, occurs sympatrically in southeastern Ecuador, and in disjunct stations in Nicaragua and Venezuela, but *M. coeloglossa* is known from the mountains of southeastern Ecuador and Peru. From *M. exesilabia*, it is distinguished by the large, rounded basal lobes of the lip and the glabrous apical lobe. In both species an opening on the disc leads to a deep cavity, and also in both species a smaller cavity is present at the base. The two holes appear to communicate, but they do not.

Muscarella corynetes (Luer & R.Vásquez) Luer, comb. nov.

Bas.: *Pleurothallis corynetes* Luer & R.Vásquez, Phytologia 46: 363, 1980.

Ety.: From the Greek *korynetes*, "a mace or a club bearer," referring to the clubbed apex of the lip.

Syn.: *Specklinia corynetes* (Luer & R.Vásquez) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-4 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, petiolate, acute to subacute, 15-27 mm long including the petiole 3-5 mm long, 3-4 mm wide, the base cuneate into the petiole. **Inflorescence** an erect, flexible, flexuous, loose, successively several-flowered raceme, up to 8 or more cm long including the filiform peduncle 2-3 cm long, borne laterally from the ramicaul; floral bract 1 mm long; pedicel slender, 2-4 mm long; ovary, 1.5 mm long; **sepals** translucent light yellow with purple spots, carinate, narrowly ovate, acute, long-acuminate, the tails slightly thickened toward the tip, the dorsal sepal 16 mm long, 2 mm wide, the lateral sepals oblique, 16 mm long, 2 mm wide, connate 0.5 mm; **petals** translucent, flecked with rose, ovate in lower third, long-ciliate, acute, long-attenuate, 7 mm long, 2 mm wide exclusive of the cilia; **lip** yellow, marked with dark purple, thick, cellular-glandular, ovate, 3.5 mm long, 1.6 mm wide, with erect, cellular-serrated margins below the middle, the sides reflexed above the middle creating a narrowing to a clavate, verrucose apex, the disc sulcate, the base broadly subcordate, with a pair of minute, slender processes, narrowly hinged to the column-foot; **column** slender, semiterete, 2.5 mm long, the anther, rostellum and stigma ventral, the foot thick, cellular-glandular, the foot thick, cellular-glandular.

BOLIVIA: **La Paz**: Nor Yungas, cloud forest above Río Unduavi, alt. 2450 m, 6 Feb. 1980, *C. Luer, J. Luer, R. Vásquez & M. Manon 5131* (Holotype: SEL).

This species is apparently endemic in the Nor Yungas of Bolivia. From the other small members of the subgenus it is distinguished by the comparatively large flowers with purple-spotted, long-tailed sepals; shorter tailed petals long-ciliate above the base; and a protruding dark-purple, clavate tip of the lip.

Muscarella cynocephala (Luer) Luer, comb. nov.

Bas.: *Pleurothallis cynocephala* Luer, Selbyana 5: 163, 1979.

Ety.: From the Greek *cynocephala*, "like a dog head," in allusion to the lip.

Syn.: *Specklinia cynocephala* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 2-3.5 cm mm long including the petiole 5-15 mm long, 3-4 mm wide, the base cuneate into the petiole. **Inflorescence** an erect, secund, lax, successively few-flowered raceme, up to 5 cm long including the filiform peduncle ca. 3 cm long, borne laterally from the ramicaul; floral bract 1 mm long; pedicel slender, 5 mm long; ovary, 1 mm long; **sepals** greenish white with purple spots, sparsely long-ciliate, carinate, ovate in lower third, acute, long-acuminate, the tails slightly thickened toward the tip, the dorsal sepal 10 mm long, 1.25 mm wide, the lateral sepals oblique, 9 mm long, 1.75 mm wide, connate 0.5 mm; **petals** translucent, ovate in lower third, sparsely long-ciliate, acute, long-attenuate, 5 mm long, 0.5 mm wide; **lip** light green, marked with purple, ovate, thick, 2 mm long, 0.8 mm wide, the apex truncate with a few excrescences beneath, below the middle with erect margins with apices acute and ciliate, the disc sulcate between a pair of calli on the middle third, the base truncate, minutely bilobulate, hinged to the column-foot; **column** slender, semiterete, 2 mm long with an abbreviated foot, the anther, rostellum and stigma ventral.

BOLIVIA: **Cochabamba**: epiphytic in forest between Cochabamba and Villa Tunari, alt. 1900 m, collected Nov. 1978, flowered in cultivation 21 May 1979, *C. Luer 4065* (Holotype: SEL).

This species is apparently endemic on the northern slopes of the Andes of central Bolivia. It is characterized by the an erect, slender, strict, loosely flowered raceme of successive flowers that only slightly surpasses the narrowly obovate leaves. The spotted sepals and petals are ciliate and long-caudate. The lip that resembles the head of a dog is thick with erect acute, ciliate lobes above the base and a truncate apex.

Muscarella delicatula (Lindl.) Luer, comb. nov.

Bas.: *Pleurothallis delicatula* Lindl., Folia Orch. *Pleurothallis* 38, 1859.

Ety.: From the Latin *delicatulus*, "minutely delicate," referring to the habit and flowers.

Syn.: *Humboldtia delicatula* (Lindl.) Kuntze, Rev. Gen. Pl. 2: 667, 1891.

Syn.: *Specklinia delicatula* (Lindl.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 1.5-4 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, subacute, 11-14 mm long including a petiole ca. 1 mm long, 4-5 mm wide, the base cuneate into the petiole. **Inflorescence** an elongating, flexible, flexuous, lax, successively many-flowered raceme, up to 10 cm long including the filiform peduncle 1-1.5 cm long, borne laterally from the ramicaul; floral bract 1.5 mm long; pedicel 1-1.5 mm long; ovary, 1 mm long; **sepals** yellow, sometimes striped in purple, carinate, slightly thickened toward the apices, the dorsal sepal oblong, obtuse, 5 mm long, 1.5 mm wide, 3-veined, the lateral sepals free, falcate-oblong, oblique, acute, 5 mm long, 1.2 mm wide, 2-veined; **petals** translucent yellow, glabrous, cuneate-obovate, 1.75 mm long, 0.75 mm wide, 1-veined, with the apex obliquely truncate, minutely lacerate; **lip** yellow, red-brown below the middle, subpandurate-trilobed, 3.4 mm long, 1 mm wide, the anterior lobe pyriform, thickened, cellular-spiculate, with the apex rounded, the lateral lobes below the middle, thin, erect, low, oblong, minutely lacerate, the disc with 3 parallel lamellae through the basal half, the base truncate, hinged to the column-foot; **column** semiterete, winged above the middle, 2 mm long, with a pair of minute marginal lobules below the middle, the anther hooded, ventral, the stigma also ventral, the foot 1 mm long.

JAMAICA: sine loc., *W. Purdie s.n.* (Holotype: K). **Surrey**: Portland: near Mabess River, alt. 4000 ft., 22 Feb. 1900, *W. Harris 7826* (BR, K); Mt. Moses, alt. 3500 ft., Nov. 1881, *D. Morris 2031, 2279* (K); near John Crow Peak, 24 Jan. 1902, *W. Harris 10478* (BM, K); Mabess River, alt. 2500 ft., 25 July 1903, *G.E. Nichols 140* (K); near Mabess River, alt. 3,500 m, 12 Apr. 1900, *W. Harris 9007* (BM); Mt. Moses, alt. 3500 ft., Nov. 1885, *D. Morris 2277* (K). **Cornwall**: near Troy, alt. 2500 ft., 7 Dec. 1904, *W. Harris 8869* (BM, K). **Manchester**: northwest of Christiana, alt. 3,000 ft., 22 Oct. 1955, *G.R. Proctor 11080* (AMES); epiphytic in forest northwest of Troy, alt. 640 m, 10 Nov. 1985, *C. Luer, J. Luer, A. Jesup & P. Jesup 11469* (MO). **Clarendon**: near Cave Valley, south of Broom Hall, alt. 2,100 ft., Aug.-Sept. 1983, *D.L. Kelly s.n.* (TCD).

This species is endemic in the mountains of Jamaica where it is found occasionally. It is characterized by the small habit with clustered, short ramicauls and thick, elliptical leaves. The flowers are produced in slow succession in an elongating, flexible, flexuous raceme. The color varies from the usual yellow to striped in purple. The sepals are free, the petals are fimbriate on obliquely truncate apices, and the lip is subpandurate to trilobed with a thickened, rounded, microscopically spiculate apex. Below the middle the disc is trilamellate between thin, low and minutely lacerate lateral lobes. A pair of minute lobules are present on the column below the wings.

Muscarella echinodes (Luer & R.Escobar) Luer, comb. nov.

Bas.: *Pleurothallis echinodes* Luer & R.Escobar, Orquideología 16: 24, 1983.

Ety.: From the Greek *echinodes*, "prickly like a hedgehog," in fancied illusion of the flower.

Syn.: *Specklinia echinodes* (Luer & R.Escobar) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-7 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 4-6 cm long including an indistinct subpetiolate base, 3-5 mm wide, narrowly cuneate below . **Inflorescence** a horizontal, more or less creeping, loose, flexuous, successively several-flowered raceme, up to 7 cm long including the filiform peduncle 1-2 cm long, borne laterally from the ramicaul; floral bract 1.5 mm long; pedicel slender, 2-3 mm long; ovary 0.75 mm long; **sepals** translucent tan with purple spots, carinate, spiculate externally, oblong, obtuse with the apices contracted into 1 mm long tails, the dorsal 7.5 mm long, 3 mm wide, 3-veined, the lateral sepals 8 mm long, 2.5 mm wide, 2-veined, connate to above the middle; **petals** translucent yellow with faint brown spots, obovate in lower half, minutely denticulate above the middle, 5.5 mm long, 2 mm wide, with the acute apex contracted into a filamentous tail half the length of the petal; **lip** trilobed, 4.5 mm long, 4 mm wide across the lateral lobes expanded, the lateral lobes below the middle, black, erect, broadly rounded, the apical half orange, verrucose, obtuse, the disc with a red, central cavity, the base unguiculate, channeled, minutely bilobulate, hinged to the column-foot; **column** slender, semiterete, 3 mm long, the anther, rostellum and stigma ventral, the foot with a pair of slender processes projecting forward from the tip.

COLOMBIA: **Norte de Santander**: epiphytic in subparamo cloud forest, Páramo de Jurisdicciones, alt. 2300 m, 1 May 1982, *C. Luer, J. Luer, R. Escobar & D. Portillo 7675* (Holotype: SEL; Isotypes AAU, COL, JAUM).

This species is known only from the Páramo de Jurisdicciones in the Eastern Cordillera of Colombia. Vegetatively not distinctive, this species is distinguished by the lax, creeping raceme of successive flowers that resemble a spiny insect crawling through the loose substrate. The sepals are spiculate with tiny tails. The petals are caudate and microscopically ciliate. The lip is trilobed with an obtuse, verrucose apex and erect, rounded, black lobes below the middle. The unguiculate base extends beneath a pair of slender processes that project forward from the base of the column. Although these features are not typical of *Muscaria* Luer, this bizarre species seems most closely allied to the species relegated here.

Muscarella exesilabia (A.H.Heller & A.D.Hawkes) Luer, comb. nov.

Bas.: *Pleurothallis exesilabia* A.H.Heller & A.D.Hawkes, Phytologia 14: 11, 1966.

Ety.: From the Latin *exesilabius*, "with an irregularly eroded lip," incorrectly referring to the lip.

Syn.: *Specklinia exesilabia* (A.H.Heller & A.D.Hawkes) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 7-9 mm long including a petiole ca. 1 mm long, 4-5 mm wide, cuneate below into the base. **Inflorescence** an erect, loose, flexuous, successively several-flowered raceme, up to 4 cm long including the filiform peduncle ca. 1 cm long, borne laterally from the ramicaul; floral bract 1 mm long; pedicel slender, 2-2.5 mm long; ovary, 0.75 mm long; **sepals** yellow, purple toward the tips, carinate with the carinae and margins minutely erose, elliptical, acute, thickened at the apices, the dorsal sepal 4-4.75 mm long, 1.5 mm wide, 3-veined, the lateral sepals oblique, 3.75-4 mm long, 1.5 mm wide, 2-veined, free; **petals** translucent purple, broadly elliptical-obovate, obtuse, apiculate, lacerate above the middle, 1.5-2 mm long, 1-1.25 mm wide; **lip** purple, pandurate-trilobed, 1.8-2 mm long, 0.9 mm wide, with a distinct isthmus below the anterior lobe, the anterior lobe rounded, convex, long-ciliate, the lateral lobes above the base, erect, transversely oblong, the disc with a longitudinal callus with a circular cavity at the distal end just above the middle and another cavity at the base, the base hinged to the column-foot; **column** terete, 1.5 mm long, the anther and rostellum subapical, the stigma ventral, the foot thick, concave.

NICARAGUA: **Jinotega**: near Finca Santa Elena, between Matagalpa and Jinotega, alt. 4510 ft., July 1962, *A.H. Heller 6497* (Holotype: AMES).
VENEZUELA: **Táchira**: Km. 25 on road to Fundación, alt. 900 m, *R. Mejía s.n.* (Dunsterville ill. 1299).
ECUADOR: **Napo**: Río Jatunyacu, above Shandia, alt. 650 m, 12 Mar. 1991, *A. Hirtz & S. Ortega 5366* (MO); near Sumaco, alt. 1100 m, 9-11 Oct. 1999, *A. Hirtz, X. Hirtz, H. & M. Evans 6673* (MO). **Morona-Santiago**: new road between Tena and Coca, alt. 1100 m, 22 Feb. 1982, *C. Luer, J. Luer & A. Hirtz 6956* (SEL); Cordillera del Condor, epiphytic in forest east of Guismé, alt. 1300 m, 20 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13510* (MO).

This species occurs locally in three disjunct localities (Nicaragua, Venezuela and Ecuador). It is distinguished by the very small habit with delicate, flexuous, successively flowered racemes. The sepals are carinate-erose and acute with thickened apices. The petals are shortly erose-lacerate. Most distinctive is the pandurate lip with a rounded, long-ciliate apical lobe, low basal lobes and a longitudinal callus traversing the isthmus with cavities at both ends. The two holes appear to communicate, but they do not.

Muscarella fimbriata (Ames & C.Schweinf.) Luer, comb. nov.

Bas.: *Masdevallia fimbriata* Ames & C.Schweinf., Sched. Orch. 10: 18, 1930, not *Pleurothallis fimbriata* Lindl., 1859.

Ety.: From the Latin *fimbriatus*, "fimbriate," referring to the floral parts.

Syn.: *Pleurothallis setosa* C.Schweinf., Bot. Mus. Leafl., 9: 64, 1941, nom, nov. for *P. fimbriata* Ames & C.Schweinf.

Ety.: From the Latin *setosus*, "with bristles," referring to the bristly flowers.

Syn.: *Specklinia setosa* (C.Schweinf.) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Syn.: *Specklinia fimbriata* (Ames & C.Schweinf.) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6: t. 671, 2003.

Plant small to very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-5 mm long, enclosed by 2 short, ribbed sheaths. **Leaf** erect, thickly coriaceous, linear-obovate, thickly subtriangular in cross section, subacute to obtuse, 20-28 mm long, 2 mm wide, 2 mm thick, the base gradually narrowed into the subpetiolate base, **Inflorescence** a prostrate to descending, creeping, lax, successively several-flowered raceme, up to 5 cm long including the setose peduncle ca. 2 cm long, borne laterally from the ramicaul; floral bract spiculate, 1.5-2 mm long; pedicel slender, lightly spiculate, 4-5 mm long; ovary long-spiculate, 1.5 mm long; **sepals** translucent greenish white, suffused and spotted with light rose, with margins and carinae long-spiculate, the dorsal sepal ovate, acute, contracted into a slender tail slightly shorter than the blade, 11 mm long, 2.5 mm wide, 3-carinate, the lateral sepals connate 4 mm into a broad, oblong, bifid lamina, 8 mm long, 7 mm wide, with obtuse apices contracted into slender tails 4 mm long; **petals** translucent yellow with brown midvein, narrowly elliptical, acute, acuminate, lacerate, 6.5 mm long, 1.5 mm wide; **lip** rose, obovate, 5 mm long, 3 mm wide, the apex broadly rounded, fimbriate-spiculate, with a pair of low, obtuse, marginal angles in the lower third, with a low, converging pair of denticulate carinae within the angles, shallowly channeled between, the base truncate, minutely biauriculate, hinged to the column-foot; **column** semiterete, 3.5 mm long, the anther, rostellum and stigma ventral, the foot bicallous.

MEXICO: **Vera Cruz**: north of Monte Romero, alt. 200 m, collected by W. Bussey 14 Apr. 1983, flowered in cultivation 19 July 1985, *C. Luer 11396* (MO).
BELIZE: Middlesex: Stann Creek District, 20 Oct. 1939, *P.H. Gentle 3044* (AMES). Toledo: between Monkey River and Cockscomb. *P.H. Gentle 4298* (AMES); Edwards's Road beyond Columbia, *P.H. Gentle 6288* (AMES).
GUATEMALA: sine loc., 1939, *M.W. Lewis 174* (AMES).
COSTA RICA: across the Río Reventazón, alt. 900-1700 ft., *C.H. Lankester 1176* (holotype of *M. fimbriata*: AMES); sine loc., obtained from L. Glicenstein by P. Jesup, cultivated at Bristol, CT, 17 Nov. 1977, *C. Luer 2215* (SEL). **Limón**: Cordillera de Talamanca, ridge between Quebrada Camagre and Río Barbilla, alt. 180-480 m, 9 Sept. 1988, *M. Grayum et al. 8916* (CR, MO). **Puntarenas**: south of Las Cruces de Coto Brus, ridge west of Río Jaba, alt. 1140-1360 m, 24 Jan. 1989, *M. Grayum 9304* (CR, MO). **Cartago**: near Turrialba, hillside behind Instituto Interamericano, 21 July 1947, collected by E.H. Taylor & A. Allen, *G.P. DeWolf 358* (AMES).
HONDURAS: **Atlántida**: Campamento Quebrada Grande, southwest of La Ceiba, base of Pico Bonito, alt. 50-80 m, 12 May 1993, *R.L. Liesner & D. Mejía 26230* (MO).

This unique species is uncommon but widely distributed in Central America. It is distinguished by the narrow, thickly triquetrous leaves, and a creeping raceme with a spiculate peduncle and rachis. The sepals are tall-carinate and spiculate with slender tails. The petals are short and shortly fimbriate. The lip is obovate with a broadly rounded, spiculate apex.

Muscarella fuchsii (Luer) Luer, comb. nov.

Bas.: *Pleurothallis fuchsii* Luer, Selbyana 1: 244, 1975.

Ety.: Named in honor of the late Fred Fuchs, Jr., of Naranja, Florida, who discovered this species

Syn.: *Specklinia fuchsii* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 10-15 mm long including the petiole 2-3 mm long, 3-4 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** a fascicle of successive flowers borne by an erect, filamentous peduncle, 20-30 mm long, borne laterally from the ramicaul; floral bracts 1-2 mm long; pedicels 3 mm long; ovary 0.5 mm long; **sepals** yellow-green, with purple margins and stripes, carinate, sparsely denticulate-papillose on the margins and ribs, the dorsal sepal ovate, acute, contracted into a thick apex, 4 mm long, 1.5 mm wide, the lateral sepals oblong, acute, contracted into a thick apex, 4 mm long, 1.5 mm wide, free at the base; **petals** yellow with three, purple stripes, ovate, oblique, minutely serrate, acute, 2 mm long, 0.75 mm wide; **lip** purple, oblong, thick, 2 mm long, 0.75 mm wide, the apex convex, rounded, verrucose, cellular-papular, the disc with a pair of thick, low carinae on the middle half, the base truncate, minutely bilobulate, hinged to the column-foot; **column** semiterete, 1.8 mm long, the anther, rostellum and stigma ventral, the foot thick.

ECUADOR: **Pastaza**: epiphytic near Puyo, alt. 750 m, collected by Fred Fuchs, Jr., flowered in cultivation Jan. 1975, *C. Luer 157* (Holotype: SEL).

This species, endemic in the eastern lowlands of Ecuador, is allied to *Muscarella semperflorens* (Lindl.) Luer, which is found from the lowlands eastern Ecuador to the Guyanas and Venezuela. *Muscarella fuchsii* is distinguished from the other members of the genus by the very small habit with oblanceolate leaves; a fascicle of successive flowers borne beyond the tips of the leaves; sepals with narrow, thickened apices; short, acute, serrate petals; and a thick, oblong, verrucose, cellular-papular lip.

Muscarella furcatipetala (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis furcatipetala* Luer & Hirtz, Rev. Soc. Bol. Bot. 3: 50, 2001.

Ety.: From the Latin *furcatipetalus*, "with forked petals," referring to the non-fringed petals.

Syn.: *Specklinia furcatipetala* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-6 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, long-petiolate, subacute to obtuse, 20-35 mm long including the petiole 8-15 mm long, 4-5 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** a suberect, flexible, flexuous, loose, successively several- to many-flowered raceme, up to 8 cm long including the filiform peduncle 2-3 cm long, borne laterally from the ramicaul; floral bract 1.25 mm long; pedicel slender, 4-7 mm long; ovary sparsely spiculate, 1 mm long; **sepals** translucent with purple spots, carinate along the veins, with the ribs and margins sparsely spiculate, the apices acute, long-attenuate, the dorsal sepal narrowly triangular, 9 mm long, 1.4 mm wide, the lateral sepals triangular-ovate, oblique, acute, attenuate, 9 mm long, 2 mm wide, connate 0.75 mm; **petals** translucent, oblong in the basal fourth below an acute fork on either side, acute, long-acuminate above, thickened in the distal third, 7 mm long, 0.75 mm wide; **lip** dark purple, oblong with the rounded apex deflexed, 3.5 mm long expanded, 1.5 mm wide, diffusely minutely papillose, with cellular-papillose margins, with an erect, subacute marginal lobe on either side on the lower third, the disc with a pair of forked calli anterior to the lobes, the base truncate, minutely bilobulate, hinged to the column-foot; **column** yellow, slender, semiterete, 2.5 mm long, the anther, rostellum and stigma ventral, the foot concave between a pair of obtuse calli.

ECUADOR: **Morona-Santiago**: Chiviasa, east of Limón, alt. 1300 m, 21 Oct. 1999, *A. Hirtz, E. Sánchez & S. Marin 7025* (Holotype: MO), C. Luer illustr. 19358; Cordillera del Cutucú, east of Macas, alt. 800 m, cultivated at S. Arévalo in Macas, 1 Mar, 2001, *C. Luer 19598* (MO). **Zamora-Chinchipe**: Cordillera del Condor, Paquisha, alt. ca. 1500 m, cultivated at Ecuagenera, Gualaceo, 7 Mar, 2001, *C. Luer 19838* (MO).

This species, apparently endemic in southeastern Ecuador, is another in the numerous species related to *Muscarella zephyrina* (Rchb.f.) Luer, a species-complex itself. The inflorescence is a flexible, remotely flowered raceme of successive

flowers. The sepals are purple-spotted and long-attenuate. Instead of cilia, teeth, or a fringe, the margins of the petals are singly forked on the basal quarter. The diffusely papillose, dark purple lip is oblong with the rounded apex deflexed. A pair of forked calli are present on the disc between the erect marginal lobes on the basal third.

Muscarella gongylodes (Luer) Luer, comb. nov.

Bas.: *Pleurothallis gongylodes* Luer, Selbyana 5: 166, 1979.

Ety.: From the Greek *gongylodes*, "like a ball," referring to the apex of the lip.

Syn.: *Specklinia gongylodes* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant large for the genus, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1.5-2 cm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 3.5-6 cm long including the indistinct petiole ca. 1 cm long, 0.9-1 cm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, loose, flexuous, flexible, successively flowered raceme up to 13 cm long including the peduncle 5-6 cm long, borne laterally from the ramicaul; floral bract 2-3 mm long; pedicels slender, 10-15 mm long; ovary 2.5 mm long; **sepals** translucent greenish white with purple spots, carinate, glabrous, oblong below the middle, with the apex acute, contracted into a slender, terete tail ca. 6 mm long, the dorsal sepal 12-13 mm long, 3 mm wide, the lateral sepals 11-12 mm long, 2.5 mm wide, connate 2 mm; **petals** translucent with purple dots, ovate-sagittate, acute, shortly acuminate, irregularly serrate, 6 mm long, 2.5 mm wide, the base abruptly short-unguiculate; **lip** red-brown, obovoid, thick, 4.5 mm long, 2.25 mm wide, the apex convex, globose, broadly rounded, with the sides recurved and meeting beneath, above the base with erect, subacute, marginal angles, shallowly channeled between, with a small, finlike callus on the undersurface below the middle, the base concave above the hinge, minutely bilobulate, hinged to the column-foot; **column** semiterete, 3.5 mm long, the anther, rostellum and stigma ventral, the foot 0.5 mm long.

ECUADOR: **Imbabura**: epiphytic in scrub, subparamo forest west of Otavalo, alt. 3000 m, 17 Feb. 1978, *C. Luer, J. Luer & A. Hirtz 2602* (Holotype: SEL).

This species is probably endemic in high-altitude forests of northwestern Ecuador. It is distinguished from the other members of the genus by the larger than usual leaves that are far surpassed by a flexuous, distantly flowered raceme of relatively large flower. The sepals are spotted and caudate; the petals are acute and serrate; and the lip is obovoid with a large, prominent, spheroid apex.

Muscarella helenae (Fawc. & Rendle) Luer, comb. nov.

Bas.: *Pleurothallis helenae* Fawc. & Rendle, J. Bot. 47: 4, 1909.

Ety.: Named for Miss Helen A. Wood, who made a drawing of the species for Fawcett and Rendle.

Syn.: *Specklinia helenae* (Fawc. & Rendle) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-1.5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, subacute, 8-12 mm long including an indistinct petiole ca. 1 mm long, 2-3 mm wide, the base cuneate into the petiole. **Inflorescence** an erect, distantly and successively 2- to 3-flowered raceme up to 4 cm long including the peduncle 1-2 cm long, borne laterally from the ramicaul; floral bracts 1 mm long; pedicels 7 mm long below to 3 mm long above; ovary 1 mm long; **sepals** translucent light yellow-green, carinate, glabrous, the dorsal sepal ovate, acute, acuminate, 4 mm long, 1.2 mm wide, 1-veined, the lateral sepals free, ovate, oblique, 4 mm long, 1.25 mm wide, 1-veined; **petals** translucent, ovate, oblique, acute, long-acuminate, fimbriate above the subunguiculate base, 2.25 mm long, 1 mm wide, 1-veined; **lip** red, oblong-trilobed, thick, 2 mm long, 1 mm wide, the apical half cellular-papillose with the tip broadly rounded, with the lateral lobes below the middle erect, thin, broadly rounded, microscopically fringed, the disc below the middle shallowly channeled between a pair of small, oblong, pubescent calli, the base with a "V-shaped" cavity, truncate, hinged to the column-foot; **column** arcuate, winged above the middle, 1.5 mm long, the foot channeled between a pair of rounded calli, the anther, rostellum and stigma ventral.

JAMAICA: On trunks of trees, Mabess River, alt. 1150 m, *W. Harris s.n.* (Holotype: ?); Mt. Moses, alt. 3,500 ft., *J.T. Syme 2279* (BM, NY). Vicinity of Cinchona, John Crow Peak, 2-10 Sept. 1906, *N.L. Britton 275* (AMES, NY). Port Royal Mountains, crest of Mt. Horeb, alt. ca. 4,500 ft., *G.R. Proctor 6674* (AMES). Surrey Co., Fairy Glade above Hardwar Gap, alt. 1350 m, 13 Nov. 1985, *C. Luer, J. Luer, A. Jesup & P. Jesup 11495* (MO). St. Andrew Parish, Blue Mountains, northwest of Morce's Gap, alt. 5,000 ft., 8 July 1989, *D.L. Kelly Y S. Iramonger 9574* (TCD).

DOMINICAN REPUBLIC: **Barahona**: Monteada Nueva, Caña Brava, south of Cabral, alt. 1300 m, 15 June 1968, *A.H. Liogier 11662* (NY). **Constanza**: Loma Redonda, Ciénaga de la Culata, alt. 1600-1950 m, 23 Sept. 1969, *A.H. Liogier 16042* (NY): Loma del Campanario, Ciénaga de la Culata, alt. 1650-1850 m, 24 Sept. 1969, *A.H. Liogier 16076* (AMES, NY); Yaquecillo, north of Culata, alt. 1600 m, 16 Oct. 1968, *A.H. Liogier 13050* (NY); Loma de la Sal, between Jarabacoa and Constanza, alt. 1400 m, 30 Oct. 1968, *A.H. Liogier* (NY). **Peravia**: Loma de La Valvacoa, alt. 1300-1775 m, 14 July 1982, *T. Zanoni, M. Mejía & J. Pimentel 21531* (AMES, NY). **Bahoruco**: Sierra de Bahoruco, near casa #2 toward Pueblo Viejo, alt. 1700 m, 7 May 1986, *C. Luer, J. Luer & D. Dod 12209* (MO). **Santiago**: Pico Diego de Ocampo, alt. 1200 m, 17 Sept. 1968, *A.H. Liogier 12698* (NY).
HAITI: Massif du Nord, Ennery, top of Morne Basile, alt. ca. 1425 m, 15 June 1927, *E.L. Ekman 8446* (AMES); Morne des Commissaires, near Oriani, alt. 5,800 ft., 27 July 1944, *J.T. Curtiss 5* (AMES).
CUBA: reported, specimen not seen.

This species is known from the islands of Jamaica and Hispaniola, and reported from Cuba. It is characterized by the minute, caespitose habit with twice longer, hair-like racemes of two or three successive flowers. The sepals are carinate and acuminate; the petals are fimbriate and also acuminate; and the lip is red, thick and oblong, cellular-papillose and rounded at the apex. Below the middle the lateral lobes are low and broadly rounded, and a pair of pubescent, oblong calli are on the disc.

Muscarella herpestes (Luer) Luer, comb. nov.

Bas.: *Pleurothallis herpestes* Luer, Selbyana 5: 167, 1979.

Ety.: From the Greek *herpestes*, "a creeping serpent," in fancied illusion of the inflorescence.

Syn.: *Specklinia herpestes* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant small, terrestrial or epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-7 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, obtuse, 3-4 cm long including an indistinct subpetiolate base, 2.5-3 mm wide, narrowly cuneate below . **Inflorescence** a horizontal, more or less creeping, loose, successively few-flowered raceme, up to 4 cm long including the filiform peduncle 1-1.5 cm long, borne laterally from the ramicaul; floral bract 1.5 mm long; pedicel slender, 1.5 mm long; ovary 1.5 mm long; **sepals** translucent greenish white with dark purple spots, carinate, the dorsal sepal narrowly triangular, acute, long-attenuate, 7 mm long, 1.5 mm wide, 3-veined, the lateral sepals ovate-falcate, oblique, acute, acuminate, 7 mm long, 2 mm wide, 2-veined, free; **petals** translucent with purple midvein, elliptical in lower third, long ciliate-fimbriate, acute, long-acuminate, 5 mm long, 0.75 mm wide excluding the cilia; **lip** heavily spotted with dark purple, ovate-trilobed, 4 mm long, 1.75 mm wide, the margins long-ciliate, the apex rounded, with small, thin, erect, uncinate, marginal lobes in lower fourth, the disc shallowly sulcate, the base broadly truncate, minutely bilobulate, firmly attached to the column-foot; **column** semiterete, 2.5 mm long, the anther, rostellum and stigma ventral, the foot broad, 0.5 mm long.

COSTA RICA: **Cartago**: epiphytic in forest below Empalma, alt. ca. 1900 m, 14 Sept. 1979, *C. Luer, J. Luer, & K. S. Walter 4169* (Holotype: SEL). **Heredia**: near Vara Blanca, alt. ca. 1800 m, 15 Sept. 1979, *C. Luer, J. Luer, & K. S. Walter 4184* (SEL). **Guanacaste**: Parqué Nacional Guanacaste, Estación Cacao, Sendero Cerro Cacao, alt. 1200 m, 2 June 1990, *Bernal Apú 3* (CR).

This species is known only from the mountainous forests of central Costa Rica. An illustration by Endres is not known. Vegetatively not distinct, this species is distinguished by the lax, creeping raceme of successive flowers that resemble an insect or spider crawling through the loose substrate. The spotted sepals are long-acuminate with the tails of the lateral sepals and petals curving upward. The lip is long-ciliate with a pair of small, hooklike lobes below the middle.

Muscarella ichthyonekys (Luer) Luer, comb. nov.

Bas.: *Pleurothallis ichthyonekys* Luer, Selbyana 3: 316, 1976.

Ety.: From the Greek *ichthyonekys*, "fish-carcass," in fancied allusion to the petals.

Syn.: *Specklinia ichthyonekys* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant small, terrestrial to epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-12 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, obtuse, 2.5-5 cm long including an indistinct petiole 1-3 cm long, 6-9 mm wide, narrowly cuneate below. **Inflorescence** a horizontal, more or less creeping, loose, successively few-flowered raceme, up to 14 cm long including

the filiform peduncle 2-3 cm long, borne laterally from the ramicaul; floral bract 1-1.5 mm long; pedicel slender, 2.5-4 mm long; ovary 1-1.5 mm long; **sepals** dark red-purple, carinate, the dorsal sepal narrowly triangular, acute, attenuate, 7-9 mm long, 1.5-2 mm wide, 3-veined, the lateral sepals ovate, oblique, 6.5-9 mm long, 6-7.5 mm wide, 2-veined, connate 3-4 mm; **petals** translucent with purple midvein, elliptical in lower third, sparsely long ciliate-fimbriate, acute, long-acuminate, 5 mm long, 0.5 mm wide excluding the cilia; **lip** dark red, pandurate-trilobed, 4.5-5.5 mm long, 3 mm wide across the lobes expanded, the apex broadly rounded, cellular, with thin, erect, oblong, marginal lobes in lower third, the disc shallowly sulcate between a pair of erect, rounded calli between the apical lobe and the lateral lobes, the base concave with tall margins, hinged to the column-foot; **column** clavate, 3-4 mm long, the anther, rostellum and stigma ventral, the foot concave, 1.5 mm long.

ECUADOR: **Zamora-Chinchipe**: epiphytic in dwarf forest between Loja and Zamora, alt. 2800 m, 6 Mar. 1977, *C. Luer, J. Luer & K. Cordoba 1571* (Holotype: MO); east of pass east of Loja, alt. 2600 m, 21 Jan. 1992, *C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 16064* (MO); forest east of Yangana, alt. 2850 m, 19 Mar. 1982, *C. Luer, J. Luer & A. Hirtz 7192* (SEL); Cajanuma range south of Loja, alt. 2950 m, 21 Mar. 1985, *C. Luer, J. Luer & A. Hirtz 10800* (MO).

This species is found occasionally in mountainous forests of southeastern Ecuador. Although vegetatively similar to most of the other members of the genus, this species is distinguished by the loose raceme of successive, dark purple flowers that creeps in the surrounding substrate. The sepals are acuminate; the petals are long-ciliate below the aristate apex; and the lip is three-lobed with a broad, rounded apex and oblong, erect lateral lobes in the lower third.

Muscarella infinita (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis infinita* Luer & Hirtz, Rev. Soc. Bol. Bot. 1(2): 13, 1997.

Ety.: From the Latin *infinitus*, "boundless," referring to the limitless variations of the lip found in *Pleurothallis zephyrina* Rchb.f. [=*Muscarella zephyrina* (Rchb.f.) Luer].

Syn.: *Specklinia infinita* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, 2 mm long, enclosed by 1-2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 15-17 mm long including a petiole 4-5 mm long, 3-3.5 mm wide, narrowly cuneate below into the base. **Inflorescence** a loose, successively few-flowered raceme up to 6 cm long including the filiform peduncle 3-4 cm long; floral bract thin, 1 mm long; pedicel 5-6 mm long; ovary 0.5 mm long; **sepals** translucent light yellow, carinate, glabrous, the dorsal sepal narrowly ovate, concave, acute, long-attenuate, 5 mm long, 1 mm wide, the lateral sepals free, narrowly ovate, oblique, acute, long-attenuate, 5 mm long, 1 mm wide; **petals** similarly colored, ovate below the middle, fimbriate, 3.25 mm long, 0.75 mm wide, acute, contracted into a filiform apex above the middle; **lip** light yellow with 2 purple stripes, ovate-trilobed, 2 mm long, 1 mm wide, the apical lobe rounded, cellular-glandular, the lateral lobes broadly rounded, erect, with obtuse, antrorse apices above the middle, the disc featureless, cellular-glandular, the base subtruncate, hinged to the column-foot; **column** green, semiterete, 1.5 mm long, the foot thick, 1 mm long, bicallous at the base.

BOLIVIA: **La Paz**: Nor Yungas, Alto Yipe, alt. 1700 m, collected in Aug. 1991 by A. Hirtz et al., flowered in cultivation in Quito, Ecuador, Dec. 1991, *A. Hirtz 5695* (Holotype: MO); C. Luer illustr. 16207.

This species is another of the numerous species related to *Muscarella zephyrina* (Rchb.f.) Luer. Although basically similar in all these variations, the lip varies in some degree in every population. The ovate lip of this species, however, is characterized by broadly rounded lateral lobes that end in obtuse angles above the middle with a featureless disc in between. In the variations considered to represent *M. zephyrina*, a pair of erect, marginal angles with medial calli are present above the base, and the lip is narrowed medially, often with some teeth or fringe.

Muscarella intonsa (Luer) Luer, comb. nov.

Bas.: *Pleurothallis intonsa* Luer, Orquideología 14: 156, 1981.

Ety.: From the Latin *intonsus*, "unshaven," referring to the lip.

Syn.: *Specklinia intonsa* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 2-6 mm long, enclosed by 1-2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 10-25 mm long including a petiole 5-10 mm long, 3-5 mm wide, narrowly cuneate below into the petiole. **Inflorescence**

a loose, flexuous, flexible, successively several-flowered raceme up to 10 cm long including the filiform peduncle 3-4 cm long; floral bract thin, 1-1.5 mm long; pedicel 5-12 mm long; ovary 1-2 mm long; **sepals** translucent light green, suffused with rose, glabrous, narrowly ovate, acute, the dorsal sepal 8.5-9 mm long, 2-2.25 mm wide, the lateral sepals free, oblique, acute, 9 mm long, 2-2.5 mm wide; **petals** similarly colored, ovate, acute, shortly fimbriate, 7.5-8 mm long, 2-2.5 mm wide; **lip** dark purple, ovoid-trilobed, 2.25-2.5 mm long, 1-1.25 mm wide, the apical lobe rounded, decurved, smooth, with long-ciliate margins, the lateral lobes small, erect, obtuse, the disc with a deep central cavity with well-defined margins, the base truncate, hinged to the column-foot; **column** green, semiterete, 1.5 mm long, the foot thick with the end of the ovary.

COLOMBIA: **Antioquia**: Caldas, Alto de San Miguel, Morro Gil, alt. 2550 m, 26 Jan. 1974, *R. Escobar et al. 1121* (Holotype: JAUM); same collection, flowered by M. & O. Robledo at La Ceja, 23 Jan. 1978, *C. Luer 2317* (SEL); sine loc., flowered in cultivation at J & L Orchids, Easton, CT, 18 Nov. 1977, *C. Luer 2232* (SEL).

This species is apparently endemic in the Central Cordillera of Colombia. Similar in habit, it is distinguished from other members of this genus by the loose, long-pedicellate raceme of comparatively large flowers with acute sepals and petals. The petals are shortly fimbriate. The lip is thick and ovoid with an erect pair of short, basal lobes with a thickly margined cavity between them. The apex is smooth, rounded and convex with a long-ciliate margin that curves beneath.

Muscarella kennedyi (Luer) Luer, comb. nov.

Bas.: *Pleurothallis kennedyi* Luer, Selbyana 3: 326, 1976.

Ety.: Named in honor of the late Dr. George Kennedy of Los Angeles, CA.

Syn.: *Specklinia kennedyi* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 9-14 mm long including an indistinct petiole, 3-4 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a loose, flexuous, flexible, successively few-flowered raceme up to 5 cm long including the filiform peduncle ca. 3 cm long; floral bract thin, 1 mm long; pedicel 6 mm long; ovary 1.5 mm long; **sepals** yellow, marked with purple in broken lines along the veins, serrulate-carinate, sparsely short-pubescent externally, oblong-ovate, shallowly concave, obtuse, contracted into short, thick, orange tails, the dorsal sepal 5 mm long, 2 mm wide, the lateral sepals oblique, 4 mm long, 2 mm wide, connate below the middle; **petals** similarly colored, ovate, subacute, thickened at the orange apex, shortly fimbriate, 2.5 mm long, 1.6 mm wide; **lip** dark purple, ovoid-trilobed, 2 mm long, 1.5 mm wide, the apical lobe rounded, convex, minutely verrucose, the lateral lobes occupying the basal half of the lip, erect, thick, rounded, the disc longitudinally channeled, with a longitudinal carina beneath, the base subtruncate, hinged to the column-foot; **column** semiterete, 1.75 mm long, toothed at the apex, the foot thick.

PERU: **San Martin**: near Divisoria, flowered in cultivation 11 Feb. 1977, *G. Kennedy s.n.* (Holotype: SEL), C. Luer illustr. 363-S.

This species is apparently rare and endemic in northern Peru. Similar in habit to the other very small species of the genus, it is distinguished by shortly fringed petals; short, thick, orange tails of the sepals; and a thick, minutely verrucose lip with thick, erect lateral lobes.

Muscarella latilabris (Foldats) Luer, comb. nov.

Bas.: *Pleurothallis latilabris* Foldats, Acta. Bot. Venez. 3: 376, 1968.

Ety.: From the Latin *latilabris*, "with a broad lip," referring to the labellum.

Syn.: *Specklinia latilabris* (Foldats) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 5-7 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute, 20-30 mm long including an indistinct petiole, 3-4 mm wide, narrowly cuneate below into the petiole. **Inflorescence** an erect, loose, nearly simultaneously few-flowered raceme up to 5 cm long including the filiform peduncle 2.5-4 cm long; floral bract thin, 1.5 mm long; pedicel 3-5 mm long; ovary 1 mm long, long-pubescent; **sepals** translucent light yellow-green with large purple spots, sparsely long-ciliate-pubescent, carinate-spiculate, the blades ovate, concave, occupying the lower third, the apex subacute, contracted into twice longer tails, the dorsal sepal 10 mm long (tail 7 mm long), 2.2 mm wide, the lateral sepals oblique, 10 mm long (tail 6 mm long), 2.5 mm wide; **petals** translucent with purple margins and central stripe, ovate in lower

fourth, long-ciliate, acute, long-caudate, 4 mm long (tail 3 mm long); **lip** dark purple, ovoid-trilobed, 2.2 mm long, 1.25 mm wide, the apex rounded, convex, verrucose, shortly fimbriate, the lateral lobes erect, oblong, obtuse, ciliate, the disc channeled between a pair of thick calli occupying the middle third, the base truncate, microscopically bilobulate, hinged to the column-foot; **column** semiterete, 2 mm long, the foot thick.

VENEZUELA: **Táchira**: headwaters of the Río Quinimarí, above Río de La Quebrada, alt. 2600 m, date not recorded, *J.A. Steyermark, G.C.K. & E. Dunsterville 10881* (Holotype: VEN).
COLOMBIA: **Boyacá**: near Chiquinquirá, secondary forest, alt. 3000 m, 2 Jan. 1993, *A. De Wilde 4437* (MO), C. Luer illustr. 16617. **Cundinamarca**: Usaquén, alt. 2900-3000 m, 1 Nov. 1948, *M. Schneider 229* (S).

This species occurs in the Eastern Cordillera of Colombia and adjacent westernmost Venezuela. Similar in habit, it is distinguished from the other members of the genus by the loose raceme of a few, nearly simultaneously opening, spotted flowers. The sepals are sparsely long-ciliate-pubescent and long-caudate. The petals are long-ciliate below the long-caudate apex. The lip is thick and short with tall, erect, oblong, lateral lobes, and a verrucose, fimbriate apex.

Muscarella lipothrix (Luer) Luer, comb. nov.

Bas.: *Pleurothallis lipothrix* Luer, Phytologia 55: 201, 1984.
Ety.: From the Greek *lipothrix*, "hairless," referring to the glabrous lip.

Syn.: *Specklinia lipothrix* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 15-30 mm long including a petiole 5-10 mm long, 4-6 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a loose, subflexuous, successively several-flowered raceme up to 12 cm long including the filiform peduncle 3-4 cm long; floral bract thin, 1 mm long; pedicel 9 mm long below to 4 mm long above; ovary 1 mm long; **sepals** translucent light green, carinate, with the carinae and margins minutely and sparsely denticulate, narrowly ovate, acute, long-acuminate, the dorsal sepal 7.5 mm long, 1.5 mm wide, the lateral sepals free, oblique, 7.5 mm long, 1.5 mm wide; **petals** translucent, elliptical and ciliate in basal third, 4.5 mm long, 1 mm wide, the apex acute, long-acuminate; **lip** dull red, glabrous, thick, oblong-trilobed, 2.6 mm long, 1.5 mm wide, the apical lobe broadly subtruncate, convex, smooth, the lateral lobes on lower third, low, oblong, erect, obtuse, the disc with a well-defined, longitudinal channel below the middle, the base subtruncate, hinged to the column-foot; **column** green, semiterete, 2 mm long, the foot thick with the end of the ovary.

EDUADOR: **Zamora-Chinchipe**: between Loja and Zamora, alt. 1400 m, collected by D. D'Alessandro, cultivated at Vilcabamba, 2 Nov. 1982, *C. Luer 8267* (Holotype: SEL).

This species is apparently endemic in southeastern Ecuador. Similar in habit to most of the other species of the genus, it is distinguished by the loose, long-pedicellate raceme of comparatively large flowers with long-acuminate sepals and petals. The blades of the petals are ciliate. The lip is thick, glabrous and oblong, convex above the middle and channeled below the middle between low, basal lobes.

Muscarella llamachoi (Luer) Luer, comb. nov.

Bas.: *Pleurothallis llamachoi* Luer, Lindleyana 13: 146, 1998.
Ety.: Named in honor of Juan Llamacho of Holguín, Cuba, who discovered this species.

Syn.: *Specklinia llamachoi* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant minute, epiphytic, caespitose; roots proportionately thick. Ramicauls slender, erect, 1-2 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, acute to subacute, 7-9 mm long, 2.5-3.5 mm wide, the base cuneate into a petiole 1-1.5 mm long. **Inflorescence** a suberect, loose, successively 2- to 4-flowered raceme 8-12 mm long including the peduncle 5-6 mm long; borne laterally from the ramicaul; floral bracts 1 mm long; pedicels 1 mm long; ovary 0.6 mm long; **sepals** translucent rose with purple stripes along veins, carinate, the dorsal sepal narrowly ovate, acute, thickened in the distal quarter, narrowly rounded at the tip, 4.3 mm long, 1.3 mm wide, 3-veined, the lateral sepals ovate, acute, 4 mm long, 1.5 mm wide, connate 1.5 mm; **petals** translucent with purple stripe, obovate, acute, 2.5 mm long, 0.75 mm wide, with the margins deeply lacerate; **lip** purple with darker purple stripe and dots, ovate-subtrilobed, 3.3 mm long, 1.75 mm wide, the apex denticulate and rounded, with the margins

lacerate and erect below the middle into fimbriate lobes on the lower quarter, the disc shallowly concave and cellular-papillose between low, submarginal calli below the middle, the apical third with numerous, minute, radiating veins from the center to the margins, the base cuneate and concave to the column-foot to which it is solidly united; **column** slender, semiterete, winged toward the apex, 2 mm long, bidentate at the tip, the anther, rostellum and stigma ventral, the foot 1 mm long.

CUBA: **Holguín**: Mayarí, Sierra de Nipe, epiphytic in moist forest behind cabins of Agricultural Station, alt. 650 m, discovered by Juan Llamacho, 25 Nov. 1997, *C. Luer, J. Luer, M. Díaz, J. Llamacho, J. Ackerman, K. & R. Dressler 18631* (Holotype: HAJB; Isotype: MO).

This species is locally abundant but known from only one area of the Sierra de Nipe. It is distinguished by the very small habit with proportionately large, purple-striped flowers. The little elliptical leaves are surpassed by a loose, successively few-flowered raceme. The tip of the narrow dorsal sepal is thickened; the laterals are acute. The petals are deeply lacerate. The oblong lip is also lacerate with erect lobes above the base. The cuneate base of the lip is narrowly concave and solidly united to the tip of the column-foot.

Muscarella longilabris (Lindl.) Luer, comb. nov.

Bas.: *Pleurothallis longilabris* Lindl., Ann. Mag. Nat. Hist. ser. 3, 1: 328, 1858.
Ety.: From the Latin *longilabris*, "with long lip," referring to the labellum.

Syn.: *Specklinia longilabris* (Lindl.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant minute, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-4 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, acute, acuminate, apiculate, 5-12 mm long, 2-3 mm wide, the base cuneate into a petiole 1-1.5 mm long. **Inflorescence** a suberect, loose, flexuous, successively 6- to 8-flowered raceme 3-4 cm long including the peduncle 1-1.5 cm long; borne laterally from the ramicaul; floral bracts 1 mm long; pedicels 2.5-3.5 mm long; ovary 0.8 mm long; **sepals** dark purple, yellow-green toward the tips, carinate, glabrous, the dorsal sepal narrowly ovate-triangular, acute, 4 mm long, 1.25 mm wide, 3-veined, the lateral sepals ovate-triangular, acute, 4.3 mm long, 1.4 mm wide, connate 1 mm; **petals** translucent with purple stripe, unevenly elliptical, unguiculate, acute, 3.75 mm long, 1 mm wide, with the margins deeply and irregularly lacerate; **lip** purple, deeply pandurate, 4 mm long, 2 mm wide across the erect, oblong, retrorse, basal lobes expanded, with the margins minutely lacerate, 0.6 mm wide across the isthmus, the apical third ovate, obtuse, concave, minutely denticulate, 3 mm wide expanded, the disc with a cellular-papillose callus on the basal half, becoming numerous, minute, radiating veins from the center to the margins, the base subunguiculate firmly united to the column-foot; **column** slender, broadly winged above the middle, 1.75 mm long, tridentate at the tip, the anther, rostellum and stigma ventral, the foot 0.5 mm long.

CUBA: Oriente, 1856-57, *C. Wright 651 in part* (Holotype: K, Isotypes: BR, MO, NY); Oriente, near Monte Verde, Jan.-July 1859, *C. Wright 1502* (AMES, BR, HAC, K, LE, MO, P), C. Luer illustr. 18801; sine loc., 1857, *Asa Gray s.n.* (BR); Sierra Cristal, Loma Los Mulos, 2-7 Apr. 1956, *Bro. Alain, J. Acuña & M. López F. 5360, 5463, 5476* (HAC, HAJB).

This species occurs locally in the mountains of the Oriente of Cuba. It is distinguished by the very small habit with acute leaves and with an elongated, lax, flexuous, successively flowered raceme. The sepals are acute. The petals are irregularly lacerate, a character common to *Muscarella* Luer. The lip, nearly as long as the sepals, is deeply pandurate with a very narrow isthmus between erect basal lobes and an ovate, concave apical lobe. The base is solidly united to the tip of the column-foot.

Muscarella macroblepharis (Rchb.f.) Luer, comb. nov.

Bas.: *Pleurothallis macroblepharis* Rchb.f., Gard. Chron, 2: 772, 1874.
Ety.: From the Greek *macroblepharis*, "with large eyelashes," referring to the ciliate petals.

Syn.: *Masdevallia culex* Rchb.f., Gard. Chron. 1: 361, 404, 488, 1888.
Ety.: From the Latin *culex*, "a mosquito," in fancied allusion to the flower.

Syn.: *Masdevallia pulex* hort. ex. Rchb.f., Gard. Chron. 1: 488, 1888, *sphalm.*

Syn.: *Specklinia macroblepharis* (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant medium in size for the genus, epiphytic, caespitose; roots slender. Ramicauls erect, 5-8 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 20-45 mm long including a petiole 8-20 mm long, 5-7 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a loose, subflexuous, flexible, successively several-flowered raceme up to 15 cm long including the filiform peduncle 4-5 cm long; floral bract 1.5-2 mm long; pedicel 3-6 mm long; ovary 2-3 mm long; **sepals** translucent light green, spotted or veined in purple, carinate, sparsely short-ciliate-pubescent, narrowly ovate, acute, long-acuminate, the dorsal sepal 11-16 mm long, 2 mm wide, the lateral sepals oblique, 11-14 mm long, 2.5 mm wide, connate 1-3 mm; **petals** translucent with purple midvein, elliptical and long-ciliate in basal half, 5-6.5 mm long, 0.5 mm wide, the apex acute, long-acuminate; **lip** dark purple, oblong-trilobed, 3.25-4.5 mm long, 1.5 mm wide, the apical lobe oblong, rounded, verrucose, coarsely ciliate on margins and beneath, the lateral lobes on lower third, erect, subacute to acute, the disc shallowly channeled between calli from the lateral lobes, the base truncate, minutely bi-auriculate, hinged to the column-foot; **column** green, semiterete, 3 mm long, the foot thick.

PERU: northern Peru, without specific locality, collected by B. Roezl 2669, flowered in cultivation at Donnaueschingen, Baden, by *M. Kirchhoff s.n.* (Holotype: W; Isotype: AMES); from Roezl, cultivated 1878, 1879, by *Bull 607, 657* (W). **Piura**: Huancabamba, rain forest between Camhoque and Huancabamba, alt. 2050 m, *D. Bennett 4254* (MO); Huancabamba, above Canchaque, alt. 2030 m, 12 Sept. 1964, *P.C. Hutchison & J.K. Wright 6553* (F, UC).
ECUADOR: **Carchi**: Maldonado, cultivated at Ecuagenera, Gualaceo, Apr. 2001, *A. Hirtz 7603* (MO). **Imbabura**: Los Cedros Reserve, wet forest, alt. 1500 m, 25 Jan. 1993, *S. Dalström, T. Höijer & H. Wanntorp 1765* (MO). **El Oro**: Piñas, 14 Mar. 1984, *A. Hirtz 1072* (MO). **Loja**: forest remnant, new road between Santa Rosa and Loja, alt. 2000 m, 20 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10692* (MO); epiphytic in seasonally dry, forested valley near El Cisne, alt. 2350 m, 26 Feb. 1986, *C. Luer, J. Luer & A. Embree 12038* (MO); same area, alt. 2500 m, 19 Feb. 1988, *U. Molau & B. Eriksen 3106* (GB); Santa Isabel, alt. 1600 m, Apr. 1991, *A. Hirtz 5428* (MO). **Zamora-Chinchipe**: Cordillera del Condor, Paquisha, alt. 1000 m, flowered in cultivation at Ecuagenera, 11 Jan. 2004, *A. Hirtz 8660* (MO).
COLOMBIA: **Antioquia**: Repressa de Anchicayá, alt. 900 m, collected by Martha Robledo, cultivated at La Ceja, 9 Apr. 1988, *C. Luer 13084* (MO). **Chocó**: El Embarcodero, collected by J. Miranda, cultivated at La Ceja by M. & O. Robledo, 19 Mar. 1989, *C. Luer 14276* (MO). Risaralda: near Pereira, cultivated by S. Tsubota. 10 May 1993, *C. Luer 16759* (MO). **Cauca**: Volcán Puracé, alt. 7,000 ft., 18 May 1878, *F.C. Lehmann s.n.* (W). **Risaralda**: collected near Pereira, flowered in cultivation by S. Tsubota, 10 May 1993, *C. Luer 16759* (MO).

This species is relatively frequent and morphologically variable in its wide distriburion from the Central Cordillera of Colombia through Ecuador into northern Peru. It is characterized by the cluster of narrowly obovate leaves and a loose, lengthening, successively flowered raceme of large flowers. The sepals are long-acuminate and usually spotted. The degree of pubescence is variable. The blades of the petals are long-ciliate. The lip is oblong with the apex rounded and verrucose with the undersurface ciliate and pubescent, and with a pair of erect, marginal lobes on the lower third.

Muscarella marginata (Rich.) Luer, comb. nov.

Bas.: *Epidendrum marginatum* Rich., Actes Soc. Hist. Nat. Paris 1: 112, 1792, non *Pleurothallis marginata* Lindl., Bot. Reg. 34: Misc. 42, 1848.
Ety.: From the Latin *marginatus*, "marginate," referring to the leaves.

Syn.: *Pleurothallis alata* A.Rich. & Galeotti, Ann. Sci. Nat. ser. 3, 3: 17, 1845.
Ety.: From the Latin *alatus*, "winged," possibly referring to the column.

Syn.: *Pleurothallis spectrilinguis* Rchb.f., Gard. Chron., 2: 457, 1882.
Ety.: From the Latin *spectrilinguis*, "a lip worth beholding," referring to the spectacular lip.

Syn.: *Pleurothallis marginata* (Rich.) Cogn., Fl. Bras. 3(4): 478, 1896, non *P. marginata* Lindl. 1838.

Syn.: *Restrepia liebmanniana* Kraenzl., Vidensk. Meddel. Dansk Naturhist. Foren. Kjobenhavn 71: 171, 1920.
Ety.: Named for Frederik M. Liebmann of Copenhagen, who collected this species in Mexico.

Syn.: *Pleurothallis hastata* Ames, Orchidaceae 2: 268, 1908.
Ety.: From the Latin *hastatus*, "arrowhead-shaped," referring to the labellum.

Syn.: *Pleurothallis scopula* Schltr., Repert. Spec. Nov. Regni Veg. 9: 28, 1910.
Ety.: From the Latin *scopula*, "a little broom," referring to the fasciculate inflorescence.

Syn.: *Specklinia hastata* (Ames) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.
Syn.: *Specklinia alata* (A.Rich. & Galeotti) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6; x, 2003.
Syn.: *Specklinia spectrilinguis* (Rchb.f.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Plant small to very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 18-25 mm long including the petiole 3-5 mm long, 2-3 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** a congested raceme of successive flowers borne by an erect, filamentous peduncle, 25-40 mm long, borne laterally from the ramicaul; floral bracts 2-3 mm long; pedicels slender, 5-6 mm long; ovary 2 mm long; **sepals** translucent pale yellow with purple spots, carinate, sparsely denticulate on the margins and carinae, narrowly ovate, acute, contracted into a slender tail about as long as the blade, the dorsal sepal, 7-10 mm long, 1.5-1.75 mm wide, the lateral sepals, 7-9 mm long, 1.5-1.75 mm wide, connate basally; **petals** translucent, narrowly ovate, acute, serrulate, long-serrate on the lower margin, 3 mm long, 0.6 mm wide; **lip** dark purple, oblong-trilobed, thick, 3.5 mm long, 1.5 mm wide, the apex convex, broadly rounded, long-ciliate-fringed, the sides above the base with erect, obtuse lobes, the disc minutely verrucose, channeled between a pair of calli extending forward from the lateral lobes, with a finlike callus on the undersurface below the middle, the base truncate, minutely bilobulate at the corners, hinged to the column-foot; **column** semiterete, 2.5 mm long, the anther, rostellum and stigma ventral, the foot with a pair of minutely verrucose calli at the tip.

MEXICO: sine loc., *A. Richard s.n.* (Holotype of *Epidendrum marginatum*: W). **Vera Cruz**: Mirador, alt. 3,000 ft., without date, *Galeotti 5197* (holotype of *P. alata*: BR, W); near Mirador, Mar. 1842, *F.M. Liebmann 7349* (holotype of *Restrepia liebmanniana*: C); sine loc., cultivated at Glasnevin, Ireland, received from *F.W. Moore 383* (W); sine loc., *Leibold s.n.* (W); Vera Cruz, near Mirador, Nov. 1842, *F.M. Liebmann 7298* (orchid nr. 127, 128, 129) (C); Feb. 1842, *F.M. Liebmann 7299* (orchid nr. 129) (C); Zacuapan, alt. 900-1000 m, Feb. 1915, *C.A. Purpus 2151* (AMES, BREM); sine loc., cultivated at Glasnevin, Ireland, received from *F.W. Moore 383* (W); near Zacuapan, alt. 900 m, 11 Feb. 1932, *O. Nagel 2659* (AMES). **Chiapas**: La Independencia, Santa Elena valley east of Montebello National Park, alt. 760 m, 21 Jan. 1982, *D.E. Breedlove 57670* (CAS); Ocosingo, road to Boca Lacantum, alt. 180 m, 15 Sept. 1985, *E. Martínez S. 13871* (MEXU, MO). Sine loc., cultivated at the Hamburg Botanical Garden, received in 1883 from *Mr. James O'Brien s.n.* (holotype of *P. spectrilinguis*: W).
GUATEMALA: **Alta Verapaz**: Cubilgüitz, alt. 350 m, Dec. 1901, *H. von Türckheim 501* (holotype of *P. hastata*: AMES; isotype: US); Cubilgüitz, May 1903, *H. von Türckheim II-1180* (AMES); Finca Chicoy north of Cobán, alt. ca. 1500 m, collected and cultivated by O. Archila, Cobán, 13 Feb. 1990, *C. Luer 14634* (MO); La Escalera, alt. ca. 1500 m, collected and cultivated by H. Ibañez in Cobán, 14 Feb. 1990, *C. Luer 14655* (MO).
HONDURAS: **Comayagua**: Pito Solo, Lake Yojoa, alt. 2,000 ft., 1 Sept. 1932, *J.B. Edwards 234a* (AMES). Sine loc., *O. Ames s.n.* (AMES).
NICARAGUA: **Matagalpa**: Cerro Matapalos, alt. 1380 m, *A.H. Heller 1261* (SEL).

Relatively frequent in Mexico and Guatemala, this species was first described from Mexico as *Epidendrum marginatum* by L.C. Richard in 1792. In 1845, it was described as *Pleurothallis alata* A.Rich. & Galeotti, and again from Mexico, by Richard and Galeotti. Reichenbach's sketch on the type sheet of *P. spectrilinguis* [=*Muscarella marginata* (Rich.) Luer at W, leaves no doubt of its identity. Not having been recognized from any of the scanty, early descriptions, the species became known as *Pleurothallis hastata* [=*M. marginata*], from a Guatemalan collection, and a similar species from Costa Rica acquired the name *P. strumosa* [=*Muscarella strumosa* (Ames) Luer.

Muscarella marginata is characterized by the very small, narrow leaves and a fascicle of slender pedicels borne above the leaves by a slender peduncle. The sepals are mottled with purple, sparsely spiculate, and with tails of variable length. Short tails are relatively thick; long tails about as long as the blade are slender. The petals are small and irregularly shortly lacerate. The lip is dark purple and oblong and convex with the sides revolute, sometimes meeting beneath to create a tube. The margins are minutely denticulate or lacerate. Erect marginal lobes are present on the lower third with a pair of calli.

Muscarella megalops (Luer) Luer, comb. nov.

Bas.: *Pleurothallis megalops* Luer, Selbyana 7: 118, 1982.

Ety.: From the Greek *megalops*, "large appearance," referring to the lip.

Syn.: *Specklinia megalops* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant large for the genus, epiphytic, caespitose; roots slender. Ramicauls erect, 5-10 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 30-45 mm long including a petiole 5-20 mm long, 7-9 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a loose, subflexuous, flexible, successively several-flowered raceme up to 18 cm long including the filiform peduncle 4-5 cm long; floral bract 2 mm long; pedicel 5-7 mm long; ovary 3 mm long; **sepals** translucent green, spotted with purple, prickly-carinate, sparsely ciliate, narrowly oblong, with the acute apices contracted into slender tails slightly shorter than the blades, the dorsal sepal 22 mm long, 3 mm wide, the lateral sepals free, oblique, 23 mm long, 3 mm wide; **petals** translucent, narrowly triangular, 14 mm long, 1 mm wide at the base, long-ciliate, with the apex long-acuminate; **lip** red-purple, obovate-trilobed, 13 mm long, 6 mm wide, the apical lobe broadly obovate, convex with the margins incurved, rounded, long-ciliate and long-pubescent externally, the lateral lobes above the base, erect, acute, the disc shallowly channeled between calli from the lateral lobes, the base truncate, densely fixed to the column-foot; **column** green, semiterete, 3 mm long, the foot thick.

EDUADOR: **Azuay**: epiphytic in the western forested slopes of Azuay, cultivated by B. Malo at Tárqui, 26 Feb. 1982, *C. Luer 7025* (Holotype: SEL). **El Oro**: sine loc., El Cisne, alt. 8,000 ft., as "Restrepia," collector either André or Lehmann (W). **Loja**: El Cisne, alt. 1600 m, cultivated at Gualaceo, 1999, *A. Hirtz 7143* (MO).

This species, most closely allied to *Muscarella macroblepharis* (Rchb.f.) Luer, is rare in southwestern Ecuador. Vegetatively, it is larger than most other members of the genus. The inflorescence is a long, loose, flexuous raceme of large, spectacular flowers. The spotted sepals long and narrow with tails slightly shorter than the blades. The petals are long-ciliate below the aristate apex. The lip, by far the largest in the genus, is obovate and convex with erect, long-ciliate and pubescent margins.

Muscarella oblonga (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis oblonga* Luer & Hirtz, Lindleyana 11: 174, 1996.

Ety.: From the Latin *oblongus*, "oblong," referring to the labellum.

Syn.: *Specklinia oblonga* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 15-30 mm long including the petiole 5-10 mm long, 4-5 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, loose, successively several-flowered raceme, up to 10 cm long including the filiform peduncle 2-4 cm long, borne laterally from the ramicaul; floral bract 1.5-2 mm long; pedicel slender, 4-5 mm long; ovary, 1.5 mm long; **sepals** translucent yellow, striped with brown along the veins, glabrous, subcarinate, the dorsal sepal narrowly ovate, acute, long-attenuate, 10 mm long, 2.5 mm wide, the lateral sepals narrowly ovate, oblique, acute, long-attenuate, 10 mm long, 2 mm wide, connate 0.5 mm; **petals** translucent yellow with brown midvein, ovate in the basal third, lacerate, acute, long-acuminate, 7 mm long, 1 mm wide; **lip** yellow, brown down the center, oblong, 3 mm long, 1.75 mm wide, the margin near the middle minutely denticulate, the apex broadly rounded, the disc with a low pair of parallel calli on the middle third, the base broadly rounded, hinged to the column-foot; **column** terete, 1.25 mm long, the anther, rostellum and stigma ventral, the foot 0.5 mm long, shallowly concave.

ECUADOR: Pichincha: epiphytic in wet, west flank of Volcán Illiniza, Cerro Azul, alt. 2,800 m, 23 Jan. 1987, *C. Luer, J. Luer & A. Hirtz 12479* (Holotype: MO); La Liberia west of Quito, alt. 2,700 m, Nov. 1983, *A. Hirtz 1416* (MO); Pelagallo, alt. 2800 m, 6 Dec. 1984, *A. Hirtz 2144* (MO).

Vegetatively similar to the majority of the species of the genus, *Muscarella oblonga* is distinguished from them by the simple, flat, oblong lip. Escept for this feature is most similar to the common and variable *M. zephyrina* (Rchb.f.) Luer.

Muscarella perangusta (Luer) Luer, comb. nov.

Bas.: *Pleurothallis perangusta* Luer, Selbyana 3: 162, 1976.

Ety.: From the Latin *perangustus*, "very narrow," referring to the leaves and sepals.

Syn.: *Specklinia perangusta* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-4 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly linear, semiterete, acute, 25-40 mm long, 2 mm wide, gradually narrowed below to the base. **Inflorescence** a loose, flexible, lightly flexuous, successively several-flowered raceme, up to 15 cm long including the filiform peduncle 5-6 cm long, borne laterally from the ramicaul; floral bract 1 mm long; pedicel slender, 12 mm long below to 6 mm long above; ovary 2.5 mm long; **sepals** translucent yellow with brown veins, glabrous, carinate, ovate in the basal half, the apex acute, long-attenuate, the dorsal sepal 11 mm long, 1.5 mm wide, the lateral sepals oblique, 12 mm long, 2.25 mm wide, connate 2 mm; **petals** translucent, elliptical-ovate, acute, long-ciliate on the lower margin, 3.5 mm long, 0.5 mm wide; **lip** yellow, dark purple toward the apex, oblong-trilobed, 3.25 mm long, 1.5 mm wide, the apex, oblong, rounded, convex, with the margins revolute, ciliate beneath, with a longitudinal, fin-like callus beneath below the middle, the disc below the middle with erect, subacute marginal angles or lobes, sulcate medially between a pair of thick calli within the lobes, the calli touching medially to create an opening toward the middle and the other at the base, the base truncate, very minutely bilobulate, hinged to the column-foot; **column** semiterete, 3 mm long, the anther, rostellum and stigma ventral, the foot thick, bicallous, dark purple,

EDUADOR: **Napo**: epiphytic in wet forest west of Tena, alt. 600 m, 26 July 1975, *J. Brenner 14* (Holotype: SEL), same collection, flowered in cultivation 22 Mar. 1976, *C. Luer 284-S* (SEL); between Río Jatunyacu and Pano, alt. 800 m, 22 Feb. 2004, *A. Hirtz & X. Hirtz 8680* (MO).

This species occurs in the wet, forested lowland of eastern Ecuador. It is characterized by slender, semiterete leaves two millimeters in diameter, and a long, flexuous, successively flowered raceme. The sepals are narrow and acuminate with tails about as long as the blades. The petals are simply acute with a row of cilia on the lower margin. The lip is oblong with the apex rounded and convex with the ciliate margin beneath. The disc is channeled below the middle between a pair of thick calli within erect, marginal lobes.

Muscarella quinqueseta (Ames) Luer, comb. nov.

Bas.: *Pleurothallis quinqueseta* Ames, Sched. Orch. 9: 35, 1925.

Ety: From the Latin *quinquisetus*, "with five bristles," referring to the tails of the sepals and petals.

Syn.: *Specklinia quinqueseta* (Ames) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-6 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 10-25 mm long including the petiole 3-8 mm long, 2.5-4 mm wide, the base narrowly cuneate into the petiolate base. **Inflorescence** a suberect, flexible, flexuous, loose, gradually lengthening, several-flowered raceme of successive flowers, up to 7 cm long including the peduncle 2-3 cm long, from near the middle of the ramicaul; floral bracts 1.5 mm long; pedicels 7-8 mm long; ovary 1 mm long; **sepals** translucent light green, suffused with purple, glabrous, membranous, narrowly ovate, acute, acuminate-caudate, the tails much longer than the blade, the dorsal sepal 11-12 mm long, 1.25-1.5 mm wide, the lateral sepals oblique, 11-12 mm long, 1.5 mm wide, connate at the base; **petals** translucent, with the midvein purple, lacerate and elliptical in the basal sixth, acute long-attenuate, 10-11 mm long, 1 mm wide; **lip** purple, three-lobed, oblong, 2.25 mm long, 0.9 mm wide, the apex ovate, obtuse, less cellular-glandular, with the lateral lobes erect, acute, on the lower third, the disc shallowly channeled between calli from the lateral lobes, the base truncate, hinged to the column-foot; **column** slender, semiterete, 1.75 mm long, the foot short, thick, bicallous, the anther, rostellum and stigma ventral.

COSTA RICA: **Alajuela**: San Ramón, 1869, *A. Endres 248* (W). **San José**: San José, La Hondura, alt. 1300-1700 m, 2-4 Mar. 1924, *P.C. Standley 36283* (Holotype: AMES, Isotype: US).
PANAMA: **Chiriqui**: Guadelupe, cultivated by A. Maduro, Dec. 1983, *C. Luer 9342* (SEL).

This Central American species is very closely allied to the frequent, Andean *Muscarella zephyrina* (Rchb.f.) Luer, differing from the latter in the proportionately much longer tails of the sepals, and especially the petals. Plants answering the description of *M. zephyrina* are unknown in Central America.

Muscarella rojohnii Luer, sp. nov.

Ety.: Named for Dr. Claire Rojohn of Hales Corners, WI, co-collector of this species

Planta parva caespitosa hirsutissima, foliis minute ciliatis, pedunculo repenti ciliatis, sepalis libris longicaudatis longiciliatis punctatis, etiam petalis longicaudatis longiciliatis, et labello crasso calceoliformi distinguitur.

Plant small, epiphytic, caespitose; roots fleshy. Ramicauls erect, slender, 4-5 mm long, enclosed by 2 ribbed sheaths. **Leaf** erect, coriaceous, minutely ciliate, narrowly elliptical, obtuse, 15-20 mm long including a petiole 3-4 mm long, 4-5.5 mm wide, narrowed below into the petiole; **Inflorescence** a prostrate to descending, creeping, loosely and successively flowered raceme, up to 7 cm long or longer including the peduncle ca. 3 cm long, with the peduncle and rachis long-ciliate, borne from the ramicaul; floral bract broadly infundibular, 1.5 mm long, 1.5 mm wide; pedicel slender, long-ciliate, 4-6 mm long; ovary densely villous-pubescent, 1.5 mm long; **sepals** translucent greenish white, spotted with purple, with carinae long-spiculate, the dorsal sepal elliptical-ovate, acute, contracted into a slender tail longer than the blade, 20 mm long, 2.5 mm with, the tail 12-13 mm long, the lateral sepals connate 4 mm into a broad, oblong lamina, 6 mm long, 8 mm wide, with obtuse apices contracted into slender tails 10-13 mm long; **petals** translucent, ovate and long-ciliate in basal quarter, acute, acuminate into a slender tail, 10 mm long, 1 mm wide; **lip** purple, thickly ovoid, 3 mm long, 1.75 mm wide, the apex rounded, the outer thirds obscurely rugose, the center third with a deep, circular cavity, the basal half with erect rounded margins with a narrow, horse shoe-shaped callus medial to each, deeply concave above the membranous, obscurely bilobulate base, hinged to the column-foot; **column** semiterete, spotted with purple, 3 mm long, the anther, rostellum and stigma ventral, the foot 1 mm long.

ECUADOR: **Loja**: at the pass north of Loja, alt. 200 m, collected by C. Rojohn, D. D'Alessandro & L. Mendoza, *C. Luer 21988* (Holotype: MO).

This unique species has recently been found for the first time in an area that has been frequented by orchid hunters for a century. It is distinguished by little, elliptical leaves and a creeping, pubescent peduncle similar to that of *Muscarella fimbriata* (Ames & C.Schweinf.) Luer, which was described in *Masdevallia* Ruiz & Pav. by Ames. A few comparatively large, long-tailed flowers are produced successively. Fine cilia as seen on the peduncle are also present on the sepals, petals, and pedicels, and densely matted on the ovary. The lip is small, thick, and shaped like an old shoe with wrinkled sides.

Muscarella samacensis (Ames) Luer, comb. nov.

Bas.: *Pleurothallis samacensis* Ames, Sched. Orch. 2: 22, 1923.

Ety.: Named for the community of Samac, Alta Verapaz, Guatemata, where the species was first collected.

Syn.: *Specklinia samacensis* (Ames) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small to very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 2-4 mm long, enclosed by 2 short, ribbed sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 12-37 mm long including the petiole 5-12 mm long, 3-6 mm wide, the base cuneate into the petiole. **Inflorescence** a prostrate to descending, creeping, lax, successively several-flowered raceme, up to 6 cm long including the filiform peduncle 1-2 cm long, borne laterally from the ramicaul; floral bract echinate, 0.5-1.5 mm long; pedicel slender, ascending, 2-5 mm long; ovary spiculate, 0.75-1 mm long; **sepals** translucent yellow, spotted or lined with purple, with margins and carinae spiculate, narrowly ovate, acute, the dorsal sepal 3.75-7 mm long, 1-2.5 mm wide, 3-veined, the lateral sepals essentially free, oblique, 3.75-7 mm long, 1.5-2.5 mm wide, 3-veined; **petals** translucent yellow, narrowly ovate, 3.5-6 mm long, 0.5-1 mm wide, the margins with a few long-lacerate processes below the middle, the apex long-acuminate; **lip** purple-black, spathulate, 2.5-4 mm long, 1.5-2.25 mm wide, the anterior half subcircular with the sides more or less reflexed, more or less microscopically denticulate, with a pair of erect, acute to narrowly rounded marginal angles on the lower third, with a low, longitudinal pair of carinae within the angles, shallowly channeled between, the base truncate, minutely biauriculate, hinged to the column-foot; **column** semiterete, 1.75-2 mm long, the anther, rostellum and stigma ventral, the foot bicallous.

GUATEMALA: **Alta Verapaz**: Samác near Cobán, alt. 4500 ft., Oct. 1920, *O. Ames 765* (Holotype: AMES); Finca Gualóm near Cobán, alt. 1500 m, collected and cultivated by O. Archila in Cobán, 13 Feb. 1990, *C. Luer 14638* (MO).

COSTA RICA: sine loc., *A. Endres 25* (W). **Heredia**: Yerba Buena, northeast of San Isidro, alt. 2000 m, 22 Feb. 1926, *P.C. Standley & J. Valerio 49829* (AMES).
COLOMBIA: **Antioquia**: Yarumal, Cabeceros Spiruto Santo, alt. 2500 m, cultivated by M. & O. Robledo at La Ceja, 23 Jan. 1978, *C. Luer 2311* (SEL).
VENEZUELA: **Bolívar**: Guatopo, Auyantepui, alt. 6,000 ft., Mar. 1964, *G.C.K. Dunsterville 839B*.
ECUADOR: **Carchi**: between Tulcán and Maldonado, alt. 2300 m, 2 Apr. 1984, *C. Luer, S. Dalström & T. Höijer 9936* (MO). **Napo**: Reventador, alt. 1400 m, 5 Oct. 1984, *A. Hirtz & A. Andreetta 1959* (MO); Bermijo oil fields north of Lumbaquí, alt. 850 m, 9 Feb. 1986, *C. Luer, J. Luer, A. Hirtz & W. Flores 11745* (MO). **Pastaza**: east of Río Negro along Río Pastaza. alt. 1150 m, 12 Apr. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 11188* (MO). **Morona-Santiago**: between Macas and Guamote, alt. 1900 m, 6 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12694, 12707* (MO); Cordillera del Condor east of Guismé, alt. 1750 m, 21 May 1988, *C. Luer, A. Hirtz, A. Andreetta & W. Teague 13549* (MO). **Loja**: above Yangana north of the pass, alt. 2400 m, 23 Mar. 1985, *C. Luer, J. Luer, A. Hirtz & W. Flores 10872* (MO). **Zamora-Chinchipe**: between Loja and Zamora, alt. 2250 m, 25 Jan. 1992, *C. Luer, J. Luer, A. Jesup, P. Jesup & A. Hirtz 16161* (MO); Cordillera del Condor east of Mayaucu, alt. 1300 m, 20 May 1988, *C. Luer, A. Hirtz, A. Andreetta & W. Teague 13516* (MO).

This species occurs locally in moist forests, uncommonly in Central America, but frequently on the southeastern slopes of the Andes of Ecuador. It is morphologically variable even within a small area. Vegetatively, it is similar to many other members of the genus, but it is distinguished by the long, loose, successively flowered raceme of prickly flowers that creeps through the surrounding substrate. The sepals are acute and attenuate. The petals are irregularly long-lacerate. The lip is usually black and spathulate with a rounded apex and erect, marginal lobes in the lower third.

Muscarella schudelii (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis schudelii* Luer & Hirtz, Selbyana 23: 40, 2002.

Ety.: Named for George Schudel of Middleburg, Florida, who first cultivated this species.

Syn.: *Specklinia schudelii* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 3-4 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 15-20 mm long including a petiole 5-8 mm long, 3-4 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a loose, subflexuous, flexible, successively few-flowered raceme up to 25 mm long including the filiform peduncle ca. 20 mm long; floral bract 1.25 mm long; pedicel 4 mm long; ovary 1.5 mm long; **sepals** translucent light green, spotted in red-brown, carinate, sparsely ciliate-pubescent, ovate, acute, long-acuminate, slightly clavate at the tips of the tails, the dorsal sepal 7-8 mm long, 1.75 mm wide, the lateral sepals oblique, 7-8.5 mm long, 1.6 mm wide, connate 1 mm; **petals** translucent with a thin, brown midvein, elliptical and long-ciliate in basal half, 3 mm long, 0.5 mm wide, the apex acute, long-acuminate; **lip** brown with white, ciliate hairs, oblong, 3.5 mm long, 1.5 mm wide, the apex obtuse to subtruncate, with the tip more or less recurved, microscopically verrucose, the basal corners erect, obtuse, the disc shallowly channeled between calli from the lateral lobes, the base truncate, without auricles, hinged to the column-foot; **column** slender, semiterete, 2 mm long, the foot thick.

ECUADOR: **Zamora-Chinchipe**: Cordillera del Condor, near Paquisha, alt. ca. 1200 m, cultivated at Ecuagenera, Gualaceo, Apr. 2001, *A. Hirtz 7604* (Holotype: MO); sine loc., obtained by G. Schudel from A. Hirtz, flowered in cultivation in Middleburg, Florida, 8 June 1997, *C. Luer 18790* (MO). **Imbabura**: Cotacachi, Junín, alt. 1500-1700 m, 16 Feb. 2004, *F. Tobar & J. Monge 809* (MO).

George Schudel obtained a plant of this species from Alexander Hirtz without collection data in October 1995. When it was in flower in June 1997, he submitted a flower for identification. It appeared to be related to *Muscarella macroblepharis* (Rchb.f.) Luer, but no description could be made, because the plant had disappeared. In the meantime another plant had been collected in the Cordillera del Condor and cultivated at Ecuagenera, Gualaceo, Ecuador, where a specimen was made in April 2001.

Muscarella schudelii differs from *M. macroblepharis* in the smaller habit and flowers with slightly thickened apices of the tails. The lip is oblong, obtuse, convex, and covered by minute verrucae. The margin is fringed with white hairs.

Muscarella semperflorens (Lindl.) Luer, comb. nov.

Bas.: *Pleurothallis semperflorens* Lindl., Folia Orch. *Pleurothallis* 40, 1859.

Ety.: From the Latin *semperflorens*, "always in flower," referring to the inflorescence.

Syn.: *Pleurothallis acuminata* H.Focke, Tijdschr. Wis-Natuurk. Wetensch. 2: 195, 1849, not (Kunth) Lindl., 1842.

Ety.: From the Latin *acuminatus*, "acuminate," referring to the sepals.

Syn.: *Humboldtia semperflorens* (Lindl.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.

Syn.: *Specklinia semperflorens* (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-2 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, obtuse, 10-15 mm long including the petiole 2-3 mm long, 4-5 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** a fascicle of successive flowers borne by an erect, filamentous peduncle, 20-30 mm long, borne laterally from the ramicaul; floral bracts 2-3 mm long; pedicels 3-4 mm long; ovary 1 mm long; **sepals** yellow-green or purple, carinate, entire, ovate, with acute apices contracted into tails shorter than the blade, the dorsal sepal 3.5-5 mm long, 1.3-2 mm wide, the lateral sepals 3.5-5 mm long, 1-2 mm wide, nearly free to connate 1.5 mm; **petals** translucent yellow-green or striped with purple, elliptical, acute to narrowly obtuse, sparsely ciliate-serrate, sometimes entire, 1.5-2 mm long, 0.75-1 mm wide; **lip** yellow or purple, ovoid, thick, 2 mm long, 1-1.5 mm wide, the apex convex, rounded, minutely verrucose, ciliate on the decurved margins, the margins thick, erect, obtuse on lower half, carinate on the under surface, disc shallowly channeled between a pair of oblique calli on middle third, the base truncate, hinged to the column-foot; **column** semiterete, toothed at the apex, 1.75 mm long, the anther, rostellum and stigma ventral, the foot thick.

SURINAME: Paramaribo, in woods along the River Commeuyne, 20 Nov. 1846, *H.C. Focke illustr.* [holotype of *Pleurothallis acuminata* Focke: W, non *P. acuminata* (Kunth) Lindl., 1842]; in forest near Paramaribo, Sept. 1844, *Vreges 627* (W); in forest near Marieperton?, May 1846, *Kegel 1348* (W); Paramaribo, *H. Wullchlaegel 1795* (W); Bakhuis mountains between Kabalebo River and Coppermine Sinistrum, 13 Feb. 1965, *P.A. Florschütz & P.J.M. Maas 2846* (AMES, BBS); near Paramaribo, collected by H.H. Morgan, flowered in cultivation 7 June 1975, *C. Luer 065* (SEL); Patamaca, alt. 50 m, Dec. 1975, *C.H. Dodson & J. Blaser s.n.* (SEL).
FRENCH GUIANA: epiphytic in tall, rain forest, Piste St. Elie, alt. 100 m, 13 May 1986, *C. Luer, J. Luer & D. Barthelemy 12243* (MO); Saut Vata, Bassin du Sinnmary, 3 Oct. 1993, *G. Cremers 13252* (CAY); Barrage de Petit Saut, Bassin du Sinnmary, alt. 50 m, 21 June 1994, *G. Cremers 13322* (CAY).
GUYANA: Barima River, 1898, *E.F. im Thurn 37* (K).
BRAZIL: Amazonas: Belem, Juruá, Sept. 1901, *E. Ulle 5771* (HBG); Terr. do Amapá, Río Amaparí bei Serra do Navio, alt. 100 m, 31 Oct. 1964, *S. Vogel 151* (WU).
VENEZUELA: **Carabobo**: Guaremales, between Puerto Cabello and San Filipe, alt. 10-100 m, Dec. 1920, *H. Pittier 9155* (AMES); Guatopo, Jan. 1956, *G.C.K. Dunsterville 327.*
COLOMBIA: Cauca: near Las Juntas, slopes of the Andes west of Cali, alt. 200-500 m, *F.C. Lehmann 8204* (K).
ECUADOR: **Napo**: Puerto Napo near Michaualli, alt. 600 m, cultivated at Chamblee, GA, 22 Aug. 1989, *F L Stevenson 89-822-3* (MO).

This species is widely distributed in Amazonian South America from the lowlands of the Guyanas and Venezuela to Ecuador. Although first described by Focke, his epithet *acuminata* was already occupied by Lindley's transfer of the *acuminata* of Kunth to *Pleurothallis* R.Br. *Muscarella semperflorens* is distinguished from the other members of the genus by the very small habit with obovate leaves; a fascicle of successive flowers borne by the peduncle beyond the tips of the leaves; sepals with narrow, tail-like apices; short, acute, ciliate-serrate petals, uncommonly entire; and a thick, ovoid, verrucose lip ciliate above the middle and below the middle with thick, erect, obtuse, marginal angles or lobes.

Muscarella sibatensis (Lehm. & Kraenzl.) Luer, comb. nov.

Bas.: *Pleurothallis sibatensis* Lehm. & Kraenzl., Bot. Jahrb. Syst. 26: 445, 1899.

Ety: Named for the community of *Sibaté* where the species was collected.

Syn.: *Specklinia sibatensis* (Lehm. & Kraenzl.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-7 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 20-35 mm long including the pedicel 8-12 mm long, 2-3 mm wide, the base narrowly cuneate into the petiolate base. **Inflorescence** a suberect, flexible, flexuous, loose, gradually lengthening, several-flowered raceme of successive flowers, up to 10 cm long including the peduncle 3 cm long, from near the middle of the ramicaul; floral bracts 1 mm long; pedicels 3-5 mm long; ovary 1 mm long; **sepals** appear to have been striped with purple, carinate, minutely ciliate, membranous, narrowly ovate, acute, acuminate-caudate, the tails slightly thickened, about as long as the blades, the dorsal sepal 8 mm long, 1.5 mm wide, the lateral sepals oblique, 8 mm long, 1.25 mm wide, free to the base; **petals** translucent, narrowly elliptical-obovate in the basal half, 5.5 mm long, 1 mm wide, acute long-attenuate, with the margins of the blade above the middle minutely ciliate; **lip** presumably dark purple, thick, cuneate-oblong, 3.5 mm long, 1 mm wide, the apex rounded, pubescent, with the disc shallowly channeled, pubescent, the base truncate, minutely bilobulate, hinged to the column-foot; **column** slender, semiterete, 2 mm long, the foot short, bicallous, the anther, rostellum and stigma ventral.

COLOMBIA: **Cundinamarca**: in hills around Sibaté, alt. 2800 m, 3 Feb. 1883, *F.C. Lehmann 2553* (Holotype: K; Isotype: AMES, BM, BR), C. Luer illustr. 16989.

This species is known from only the original collection by Lehmann. The accompanying description and illustration made from type-material differ in some details from those originally published. The sepals are minutely ciliate and thickly caudate. The petals are minutely ciliate above the middle of the blade. The lip is thick, densely pubescent above the middle and narrowly cuneate without marginal angles or lobes.

Muscarella strumosa (Ames) Luer, comb. nov.

Bas.: *Pleurothallis strumosa* Ames, Sched. Orch. 9: 41, 1925.

Ety.: From the Latin *strumosus*, "with a swelling," referring to the bulbous base of the column.

Syn.: *Specklinia strumosa* (Ames) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small to very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-6 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 10-30 mm long including the petiole 3-5 mm long, 2-5 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** a fascicle of successive flowers borne by an erect, filamentous peduncle, 25-40 mm long, borne from the ramicaul; floral bracts 2-3 mm long; pedicels slender, 3-4 mm long; ovary 1.5-2 mm long; **sepals** translucent pale yellow with purple spots, carinate, sparsely denticulate on the margins and carinae, narrowly ovate, acute, contracted into a slender tail about as long as the blade, the dorsal sepal, 7-9 mm long, 1.5-2.25 mm wide, the lateral sepals, 7-8 mm long, 1.5-2 mm wide, shortly connate basally; **petals** translucent, narrowly ovate, acute, serrulate, 2.5-3 mm long, 0.5-0.75 mm wide; **lip** dark purple, oblong-trilobed, thick, 3-3.3 mm long, 1.5 mm wide, the apex convex, broadly rounded, cellular verrucose, the sides revolute with the margins minutely denticulate, the sides above the base with erect, obtuse lobes, the disc channeled between a pair of calli extending forward from the lateral lobes, with a finlike callus on the undersurface below the middle, the base truncate, minutely lobulate at the corners, hinged to the column-foot; **column** semiterete, 2.5 mm long, the anther, rostellum and stigma ventral, the foot with a pair of minutely verrucose calli at the tip.

COSTA RICA: **Cartago**: Carpintera, Feb. 1924, *C.H. Lankester 766* (Holotype: AMES); western slopes of Volcán Turrialba, ca. 1867, *A. Endres 578, fig. 50* (W); above the Tejár de Cartago toward Cristóbal, ca. 1867, *A. Endres 40, sketch 552* (W); La Estrella, 26 Mar. 1924, *P.C. Standley 39486* (AMES). **Guanacaste**: road to Santa Elena, near Monteverde Science Center, alt. 1700 m, 26 Dec. 1985, *P.M. Catling & V.R. Brownell C9.12* (AMES, DAO). **Heredia**: Yerba Buena, northeast of San Isidro, alt. 2000 m, 22 Feb. 1926, *P.C. Standley & J. Valerio 49157, 49171* (AMES). **Puntarenas**: Santa Elena de Monteverde, alt. 1500 m, 8 Aug. 1988, *J.T. Atwood & W. Haber 88-36* (AMES, K, SEL). **San José**: Zurquí, alt. 200-2500 m, 13 Feb. 1926, *P.C. Standley & J. Valerio 48055* (AMES).
GUATEMALA: **Alta Verapaz**: sine loc., cultivated by J & L Orchids, 18 Nov. 1977, *C. Luer 2220* (SEL): Finca Chicoy north of Cobán, alt. ca. 1500 m, collected and cultivated by O. Archila, Cobán, 13 Feb. 1990, *C. Luer 14634* (MO).

This species is frequent in Costa Rica, but infrequent in Guatemala where its range overlaps that of *Muscarella marginata* (Rich.) Luer. It could be considered merely an austral variation of the latter. The flowers of the two species are similar,

differing only in the lip. The sides of the lip of *M. strumosa* (Ames) Luer are revolute, sometimes with the minutely denticulate margins meeting beneath. The sides of the lip of *M. marginata* are variously fringed and not revolute.

The illustration of *Pleurothallis spectrilinguis* [=*Muscarella marginata*] on the type sheet at W clearly shows the differences. The flower is extremely similar to that of Andean *M. macroblepharis* (Rchb.f.) Luer, but the latter is readily distinguished by the distantly flowered inflorescence.

The illustration of the flower of *Pleurothallis hastata* [=*Muscarella marginata*] published in 1908 with the original description is suggestive of *M. strumosa*, but the illustration of the flower in a pane of four published in *Orchids of Guatemala* by Ames and Correll is that of *M. marginata* with the long-fimbriate lip.

Muscarella stumpflei (Luer) Luer, comb. nov.

Bas.: *Pleurothallis stumpflei* Luer, Selbyana 5: 182, 1979.
Ety.: Named in honor of Rudolph Stümpfle of Lima, Peru, who exported this species.

Syn.: *Pleurothallis simulatrix* Luer, Phytologia 55: 202, 1984.
Ety.: From the Latin *simulatrix*, "an imitator," referring to the similarity to *P. aristata* and relatives.

Syn.: *Specklinia simulatrix* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.
Syn.: *Specklinia stumpflei* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-8 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 25-45 mm long including the petiole 7-15 mm long, 6-10 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** an erect, loose, flexible, flexuous, successively several-flowered raceme, up to 8 cm long including the filiform peduncle 3-4 cm long, borne laterally from the ramicaul; floral bract 1 mm long; pedicel slender, 2-3 mm long; ovary 1 mm long; **sepals** translucent greenish white with a few, small purple spots, or sometimes intensely striped with purple, glabrous, carinate, the dorsal sepal narrowly ovate, acute, acuminate, 6-10 mm long, 1.75-2.25 mm wide, the lateral sepals narrowly triangular-ovate, oblique, acute, long-attenuate, 6.5-10 mm long, 1.75-2 mm wide, barely connate basally; **petals** translucent, sometimes veined in purple, elliptical, acute, serrate, 2.5-3.5 mm long, 0.6 mm wide; **lip** dark purple, oblong, 3-3.5 mm long, 1 mm wide, long-ciliate above the middle, the apex convex, rounded, the margins near the with an acute, erect angle or lobule, the disc shallowly sulcate, pubescent within the cleft, the base subtruncate, hinged to the column-foot; **column** slender, terete, 3 mm long, the anther, rostellum and stigma ventral, the foot bulbous, dark purple.

ECUADOR: **Zamora-Chinchipe**: epiphytic in cloud forest near Valladolid, alt. ca. 2500 m, collected July 1975 by W. Teague, L. Figueroa & D. Welisch, flowered in cultivation by H. Ripley in San Francisco, 18 Aug. 1979, *C. Luer 4096* (Holotype: MO); sine loc., presumably southern Ecuador, cultivated at Predesur, Vilcabamba, 3 Nov. 1982, *C. Luer 8268* (type of *P. simulatrix*: SEL).
PERU: sine loc., obtained by M. & O. Robledo from R. Stümpfle, flowered in cultivation at La Ceja, 28 Jan. 1978, *C. Luer 2344* (SEL).

This species is known from southeastern Ecuador and probably from somewhere in northern Peru. The plant described as *Pleurothallis simulatrix* [=*Muscarella stumpflei*] differs from *Muscarella stumpflei* in having smaller, prominently striped flowers, instead of sparsely spotted flowers. Vegetatively similar to many other members of the genus, this species is characterized by the long, loosely flowered raceme of comparatively large flowers with long, pointed sepals; short, serrate petals; and an oblong, dark purple, long-ciliate lip with a pair of small, pointed lobes near the middle.

Muscarella tamboënsis (Luer & R.Escobar) Luer, comb, nov.

Bas.: *Pleurothallis tamboënsis* Luer & R.Escobar, Orquideología 14: 174, 1981.
Ety.: Named for the municipality of El Tambo in the department of Cauca where the species was collected.

Syn.: *Specklinia tamboënsis* (Luer & R.Escobar) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-5 mm long, enclosed by 2 short, ribbed sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 15-30 mm long including an indistinct petiole ca. 5 mm long, 3 mm wide, the base cuneate into the petiole. **Inflorescence** an erect, loose, flexible, flexuous, successively several-flowered raceme, up to 5 cm long including the filiform peduncle ca. 2 cm long, borne laterally from the ramicaul; floral bract 1 mm long; pedicel 3-4 mm long; ovary 1 mm long; **sepals** translucent yellow, with a few longitudinal spots of red, carinate, with sparsely and minutely subdenticulate margins, elliptical, acute, caudate, the dorsal sepal 4.25 mm long including the tail ca. 2 mm long, 1.2 mm wide, 3-veined, the lateral sepals oblique, 4.25 mm long including the tail ca. 1 mm long, 1.5 mm long, connate at the base; **petals** translucent yellow with red midvein, elliptical, fimbriate, 3 mm long with the tail 1.5 mm long, 1 mm wide, the apex obtuse, contracted into the slender tail; **lip** dark purple, thick, oblong, 1.8 mm long, 0.6 mm wide, the apex rounded, the disc longitudinally channeled and pubescent within, the base truncate, hinged to the column-foot; **column** semiterete, light green, 1.5 mm long, the anther, rostellum and stigma ventral, the foot shallowly channeled.

COLOMBIA: **Cauca**: Munic. of El Tambo, between Uribe and Quebraditas, ''La Galera,'' alt. 2400 m, *R. Escobar et al. 1828* (Holotype: JAUM); same collection, cultivated at La Ceja by M. & O. Robledo, 21 Jan. 1978, *C. Luer 2324* (SEL).

This species is known from only the Cauca in southern Colombia. In habit it is similar to the other members of the genus, but it is distinguished by the loose, flexuous, long-pedicellate raceme of successive flowers with caudate sepals and petals; petals fimbriate below the tail; and a thick, oblong lip with a longitudinal sulcus that is pubescent within and traversing the full length.

Muscarella tempestalis (Luer) Luer, comb. nov.

Bas.: *Pleurothallis tempestalis* Luer, Selbyana 3: 396, 1977.

Ety.: From the Latin *tempestalis*, ''stormy weather,'' referring to the habitat.

Syn.: *Specklinia tempestalis* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 7-10 mm long, enclosed by 2 short, ribbed sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 13-18 mm long including the indistinct petiole, 4-5 mm wide, the base cuneate into the petiolate base. **Inflorescence** an erect, loose, flexible, flexuous, successively several-flowered raceme, 4-5 cm long including the filiform peduncle 1-2 cm long, borne laterally from the ramicaul; floral bract 1.5 mm long; pedicel 2-3 mm long; ovary verrucose, 1 mm long; **sepals** translucent red-brown, with broadly denticulate-verrucose carinae, the dorsal sepal oblong, 7 mm long, 1.5 mm wide, 3-veined, the apex acute, contracted into a slender tail 3.5 mm long, slightly thickened toward the tip, the lateral sepals oblong-falcate, concave, 7 mm long, 3 mm wide together, connate 2.5 mm, the apices acute, contracted into spender tails 2.5 mm long; **petals** translucent yellow with red midvein, elliptical, acute, fimbriate, 2 mm long, 1.5 mm wide; **lip** thick, ovoid-trilobed, 2 mm long, 1 mm wide, the anterior lobe red-purple, verrucose, with the apex rounded, the lateral lobes thick, erect, obtuse, in lower third, with a pair of verrucose, purple calli on the middle third, with a smooth, orange band between the verrucose apex and verrucose calli, the base verrucose, subcordate, hinged to the column-foot; **column** semiterete, yellow, 2 mm long, the anther, rostellum and stigma ventral, the foot thickly bilobed.

ECUADOR: **Zamora-Chinchipe**: epiphytic in dwarf forest between Loja and Zamora, alt. 2800 m, 6 March 1977, *C. Luer, J. Luer & K. Cordoba 1570* (Holotype: SEL); Cajanuma range south of Loja, alt. 2750 m, 21 Mar. 1985, *C. Luer, J. Luer & A. Hirtz 10746* (MO); east of pass east of Loja, alt. 2600 m, 21 Jan. 1992, *C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 16068* (MO); ''El Tiro,'' pass between Loja and Zamora, alt. 2850 m, 28 Sept. 2004, *F.A. Werner 1157* (GOET, MO, QCNE).

Apparently endemic at a high altitude in southeastern Ecuador, this species is similar vegetatively to many of the others of the genus, but distinguished by the loose, flexuous raceme with caudate sepals; short, fimbriate petals; and a thick, verrucose lip with a distinctive smooth, orange belt between the verrucose apex and verrucose calli on the center.

Muscarella trullifera (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis trullifera* Luer & Hirtz, Lindleyana 11: 190, 1996.

Ety.: From the Latin *trullifer*, ''bearing a spoon,'' referring to the shape of the lip like an inverted ladle or spoon.

Syn: *Pleurothallis discalis* Luer & J.Portilla, Selbyana 23: 35, 2002.
Ety.: From the Latin *discoid*, "like a disc," referring to the apex of the lip.

Syn.: *Specklinia discalis* (Luer & J.Portilla) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Syn.: *Specklinia trullifera* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Plant small to very small, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 2-4 mm long, enclosed by 2 short, ribbed sheaths. **Leaf** erect, coriaceous, spathulate-obovate, subacute, 12-20 mm long including the petiole 5-7 mm long, 3-4 mm wide, the base cuneate into the petiolate base. **Inflorescence** a prostrate to descending, creeping, lax, successively several-flowered raceme, up to 6 cm long including the filiform peduncle 1-2 cm long, borne laterally from the ramicaul; floral bract spiculate, 1 mm long; pedicel slender, ascending, 2-5 mm long; ovary spiculate, 0.75-1 mm long; **sepals** translucent yellow, carinate-spiculate, ciliate, thickened in the outer thirds, the dorsal sepal obovate, subacute, 4 mm long, 1.2 mm wide, 3-veined, the lateral sepals essentially free, elliptical, oblique, subacute, 4 mm long, 1.5 mm wide, 3-veined; **petals** translucent yellow, glabrous, ovate, acute, 3.5 mm long, 1 mm wide, the margins lacerate below the middle, the apex long-acuminate, thickened in the distal 1 mm; **lip** purple-black, spathulate, 3.5 mm long, 1-1.5 mm wide, the anterior third subcircular, microscopically papillose and erose, the margins minutely denticulate in the middle third, with a low, longitudinal pair of carinae from the base to near the middle, shallowly concave between, the base rounded, hinged to the column-foot; **column** terete, 2.25 mm long, winged at the apex, the anther, rostellum and stigma ventral, the foot obsolescent.

ECUADOR: **Morona-Santiago**: Cordillera del Condor, epiphytic in wet forest east of Guismé, alt. 1,650 m, 21 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13549* (Holotype: MO); Cordillera del Condor, epiphytic in wet forest east of Guismé, alt. 1,500 m, 18 Feb. 1986, *C. Luer, J. Luer, A. Hirtz, W. Flores & A. Embree 11896* (MO); near Mayacu, alt. ca. 1600 m, cultivated at Ecuagenera, Gualaceo, 7 Mar, 2001, *C. Luer 19848* (MO). **Zamora-Chinchipe**: Cordillera del Condor, Napintza, alt. 1000 m, June 1991, *A. Hirtz 5543A* (MO); Cordillera del Condor, Paquisha, alt. ca. 1500 m, cultivated at Ecuagenera, Gualaceo, 5 Mar, 2001, *C. Luer 19699* (holotype of *Pleurothalis discalis*: MO).

This species is apparently endemic in the Cordillera del Condor of southeastern Ecuador, where it is related to the frequent and sympatric *Muscarella samacensis* (Ames) Luer. It is readily distinguished from the latter by the yellow, tailless, spiculate sepals that are thickened toward the apex. The minutely serrated petals are attenuated above the middle with slightly swollen tips in plants found in the original area, but without swollen tips found in an area farther south. The black lip is spathulate with the apical third rounded and microscopically papillose. The loose, successively flowered inflorescence creeps through the surrounding substrate.

Muscarella tsubotae (Luer & R.Escobar) Luer, comb, nov.

Bas.: *Pleurothallis tsubotae* Luer & R.Escobar, Orquideología 20: 88, 1996.
Ety: Named for Shigenobu Tsubota of Pereira, Colombia, who collected and cultivated this species

Syn.: *Specklinia tsubotae* (Luer & R.Escobar) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 10-15 mm long, enclosed by 2-3 thin, tubular sheaths at the base. **Leaf** erect, coriaceous, narrowly obovate, acute to subacute, 3-4.5 cm long including the pedicel 1-1.5 cm long, 0.6-0.7 cm wide, the base narrowly cuneate into the petiolate base. **Inflorescence** an erect, arching, gradually lengthening, several-flowered raceme of successive flowers, 10-23 cm long including the peduncle 8-9 cm long, from a node near the middle of the ramicaul; floral bracts 2-2.5 mm long; pedicels 15-25 mm long; ovary 1.75 mm long; **sepals** pale, translucent tan, suffused and dotted with purple, glabrous, membranous, caudate, the dorsal sepal oblong, 8.5 mm long, 2.25 mm wide, subacute, contracted above the middle into a slender tail 3 mm long, the lateral sepals oblong, 8 mm long, 2 mm wide, connate 2.5 mm, subacute, contracted above the middle into a slender tail 2.5 mm long; **petals** translucent, glabrous, ovate, acute, lacerate, 4 mm long, 1.75 mm wide; **lip** purple, thick, three-lobed, 4 mm long, 2 mm wide, the apex thick, convex and round with recurved margins, the lateral lobes minute, erect, antrorse, below the middle, the disc with a deep, central cavity between calli from the lateral lobes, the margins of the revolute sides and undersurface fimbriate, the base truncate, minutely bilobulate, hinged to the column-foot; **column** green, slender, semiterete, 3 mm long, the foot short, thick, the anther, rostellum and stigma ventral.

COLOMBIA: **Risaralda**: collected near Pereira, flowered in cultivation by S. Tsubota near Pereira, 10 May 1993, *C. Luer 16763* (Holotype: MO).

This species is allied to the widely distributed *Muscarella aristata* (Hook.) Luer, but distinguished from it by a larger habit; an elongate, very long-pedicellate raceme; fimbriate petals; and a thick lip bulbous at the apex and fimbriate beneath, with tiny, acute lateral lobes, and with a deep, central excavation.

Muscarella villosilabia (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis villosilabia* Luer & Hirtz, Selbyana 23: 41, 2002.

Ety.: From the Latin *villosilabia*, "with villous labellum," referring to the lip.

Syn.: *Specklinia villosilabia* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to acute, 10-14 mm long including the petiole ca. 2 mm long, 3-3.75 mm wide, the base cuneate into the petiolate base. **Inflorescence** a suberect, flexible, loose, successively few-flowered raceme, 2.5-3 cm long including the peduncle ca. 1 cm long, from near the middle of the ramicaul; floral bracts 1 mm long; pedicels 4-5 mm long; ovary 0.5 mm long; flowers purple; **sepals** glabrous, membranous, narrowly ovate, acute, acuminate-caudate, the tails thrice longer than the blade, the dorsal sepal 6 mm long, 0.8 mm wide, 1-veined, the lateral sepals oblique, 6 mm long, 0.8 mm wide, 1-veined, connate 0.3 mm at the base; **petals** elliptical-ovate and long-fimbriate in the basal half, 2.5 mm long, 0.8 mm wide, 1-veined, with the apex obtuse, abruptly contracted into a filamentous process; **lip** purple, oblong, with the margins densely long-villous, obscurely lobed below the middle, 1.6 mm long, 0.8 mm wide, the apex rounded, the disc shallowly channeled between a pair of longitudinal calli from low, marginal, lateral lobes, the base truncate, hinged to the column-foot; **column** slender, semiterete, 1 mm long, bicallous near the middle, the foot short, thick, the anther, rostellum and stigma ventral.

ECUADOR: **Morona-Santiago**: west of Macas, along new road toward Guamote, alt. 2300 m, 2 Mar. 2001, *C. Luer, J. Luer & A. Hirtz 19622* (Holotype: MO).

This tiny species is similar to the common and variable *Muscarella zephyrina* (Rchb.f,) Luer, but it is distinguished from all the variations by a smaller habit; a shorter, fewer-flowered inflorescence; all purple flowers; narrower sepals; long-fimbriate petals; and an oblong lip with densely villous margins.

Muscarella werneri Luer, sp. nov.

Ety.: Named for Florian Werner, University of Bayreuth, who collected this species at the Estación Científica San Francisco in the province of Zamora-Chinchipe.

Planta perparva, racemo flexuoso foliis ellipticis longiore, sepalis longicaudatis, petalis infra medium fimbriatis, labello obovato apice rotundo infra medium lobis uncinatis cum callo microscopice dense piloso distinguitur.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 13-18 mm long including a petiole 3-5 mm long, 3-4 mm wide, cuneate below into the petiole. **Inflorescence** a loose, flexuous, flexible, successively several-flowered raceme up to 40 mm long including the filiform peduncle ca. 10 mm long; floral bract 0.5 mm long; pedicel 1.5 mm long; ovary 1 mm long, minutely carinate-spiculate; flowers translucent purple or pale yellow, **sepals** sparsely denticulate-carinate, ovate, acute, long-acuminate, the dorsal sepal 6 mm long, 1 mm wide, incompletely 3-veined, the lateral sepals oblique, 7.5 mm long, 1.5 mm wide, 1-veined, connate less than 1 mm; **petals** ovate and long-fimbriate in the basal half, contracted into a filiform tail in the distal half, 2.5 mm long, 1 mm wide, 1-veined; **lip** obovate, trilobed, 2 mm long, 1.2 mm wide, the lateral lobes erect, uncinate, on lower fourth, flat above the middle, the apex broadly rounded, the disc flat above the middle, with a wedge-shaped, brush-like callus composed of a dense mass of microscopic pubescence between the lateral lobes extending forward to near the middle, the base broadly truncate, hinged to the column-foot; **column** semiterete, 1.5 mm long, with the foot 0.5 mm long.

ECUADOR: **Zamora-Chinchipe**: between Loja and Zamora, near Estación Científica San Francisco, alt 2100 m, 2 Oct. 2004, *F.A. Werner 1180* (Holotype: QCNE; Isotype: MO), C. Luer illustr. 20981.

This species is apparently endemic in the orchid-rich region near the pass between Loja and Zamora. Vegetatively, it is similar to other tiny species of the genus with a flexuous raceme that reaches beyond the leaves. As in many others, the sepals are long attenuate-caudate, and the petals are long-fimbriate on the lower half. The obovate lip with a broadly rounded apex and basal, uncinate lobes is unique with a brush-like patch of a dense, microscopic pubescence below the middle between the lobes.

Muscarella xanthella (Luer) Luer, comb. nov.

Bas.: *Pleurothallis xanthella* Luer, Selbyana 1: 300, 1975.

Ety.: From the diminutive of the Greek *xanthos*, "yellow," referring to the small flowers.

Syn.: *Specklinia xanthella* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 260, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-6 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 8-12 mm long including the petiole 3-6 mm long, 3-4 mm wide, the base narrowly cuneate into the petiolate base. **Inflorescence** a fascicle of successive flowers borne be a slender, erect peduncle 20-25 mm long, from near the middle of the ramicaul; floral bracts 2-3 mm long; pedicels 5-6 mm long; ovary 1 mm long; **sepals** yellow with purple stripes, tall-carinate with the carinae sparsely denticulate, thickened at the apices, the dorsal sepal oblong, subacute to obtuse, 4.5-5.5 mm long, 2.5 mm wide, the lateral sepals ovate, acute, oblique, 4.5-5 mm long, 2 mm wide, connate 2 mm; **petals** translucent, veined in purple, obovate, subacute, lacerate, 3 mm long, 1.5 mm wide; **lip** yellow, thick, verrucose, cellular-papillose, obscurely three-lobed, 3 mm long, 1.5 mm wide, the apex thick, convex, rounded, the sides broadly rounded and suberect below the middle, the disc shallowly channeled centrally below the middle, the base truncate, minutely bilobulate, hinged to the column-foot; **column** yellow, slender, semiterete, winged toward the apex, 3 mm long, the foot short, the anther, rostellum and stigma ventral.

ECUADOR: **Napo**: wet forest west of Tena, alt. 600 m, 26 July 1975, *C. Luer, G. Luer & S. Wilhelm 456* (Holotype: SEL); Bermejo, alt. 450-600 m, Apr. 1990, *A. Hirtz 4832* (MO); , C. Luer illustr. 15329.

This species is apparently confined to the lowlands of eastern Ecuador. With the vegetatively similar habit, it is distinguished from others in the genus by the congested inflorescence borne as a fascicle by a slender peduncle longer than the leaves. The flowers are small with tall, distantly denticulate carinae on subacute sepals. The petals are shortly fimbriate. The lip is thick and minutely verrucose.

Muscarella xyloura Luer & Hirtz, sp. nov.

Ety.: From the Greek *xylourus*, "woody tailed," referring to the thick sepaline tails.

Planta perparva caespitosa, racemo repenti laxe successivifloro, sepalis anguste ovatis ad apicem in caudam incrassatam producentibus, petalis ad basim breviter laceratis supra basim filiformibus clavellatis, et labello pandurato distinguitur.

Plant very small, epiphytic, caespitose; roots proportionately coarse. Ramicauls erect, 2-3 mm long, enclosed by 2 short, ribbed sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 10-15 mm long including the petiole 2-3 mm long, 3-4 mm wide, the base cuneate into the petiole. **Inflorescence** a prostrate to descending, creeping, lax, successively several-flowered raceme, up to 5 cm long including the filiform peduncle 1-2 cm long, borne from the ramicaul; floral bract 1 mm long; pedicel slender, 2 mm long; ovary spiculate-crested, 0.5 mm long; **sepals** translucent light green, mottled with purple, carinate-spiculate, thickened in the outer thirds, the dorsal sepal narrowly triangular, acute, 5.5 mm long, 1.2 mm wide, 3-veined, the lateral sepals connate at the base, narrowly ovate, oblique, acute, 5.5 mm long, 1.6 mm wide, 2-veined; **petals** translucent, glabrous, obovate and shortly lacerate in basal third, abruptly contracted to the filiform middle third, clavellate in distal third, 4.5 mm long, 1 mm wide; **lip** purple, pandurate, 3.25 mm long, 1-1.5 mm wide, the anterior third suborbicular, microscopically papillose and erose, with a pair of erect carinae within the erect, obtuse margins of the basal third, cleft between, the base truncate, with a minute lobule at each corner, hinged between to the column-foot; **column** semiterete, 2 mm long, hooded at the apex, the anther, rostellum and stigma ventral, the foot 0.5 mm long.

ECUADOR: **Napo**: between Río Jatunyacu and Pano, alt. 800 m, 22 Feb. 2004, *A. Hirtz & X. Hirtz 8683* (Holotype: MO), C. Luer illustr. 20962.

This very small species is known from only the original collection from lowland eastern Ecuador. It is most similar to the common *Muscarella samacensis* (Ames) Luer from surrounding territories. Both species produce a creeping, successively flowered raceme of spiculate flowers, but the spicules are much reduced in *M. xyloura*. The tails of the sepals are thickened in *M. xyloura*, and the fringe of the petals is intense but short.

Muscarella zephyrina (Rchb.f.) Luer, comb. nov.

Bas.: *Pleurothallis zephyrina* Rchb.f., Bonplandia 3: 71, 1855.
Ety.: From the Greek *zephyros*, "the west wind, a breeze," possibly alluding to the habitat.

Syn.: *Pleurothallis setigera* Lindl., Folia Orch. *Pleurothallis* 38, 1859.
Ety.: From the Latin *setiger*, "bristle-bearing," referring to the sepaline tails.

Syn.: *Pleurothallis arachnantha* Rchb.f., Otia Bot. Hamburgensia 1: 18, 1878.
Ety.: From the Greek *arachnanthos*, "spider-flower," referring to the appearance of the flower.

Syn.: *Humboldtia arachnantha* (Rchb.f.) Kuntze, Rev. Gen. Pl. 2: 667, 1891.

Syn.: *Humboldtia setigera* (Lindl.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.

Syn.: *Humboldtia zephyrina* (Rchb.f.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.

Syn.: *Pleurothallis fimbripetala* Schltr., Repert. Spec. Nov. Regni Veg. 14: 385, 1916.
Ety.: From the Latin *fimbripetalus*, "with fimbriate petals," for obvious reasons.

Syn.: *Pleurothallis lauta* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 105, 1920.
Ety.: From the Latin *lautus*, "neat, elegant," referring to qualities of the species.

Syn.: *Pleurothallis schistopetala* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 113, 1920.
Ety.: From the Greek *schistopetalon*, "divided petals," referring to the fimbriate petals.

Syn.: *Pleurothallis bulbophylloides* Schltr., Repert. Spec. Nov. Regni Veg. 27: 50, 1929.
Ety.: Named for a similarity Schlechter fancied between this species and the genus *Bulbophyllum*.

Syn.: *Specklinia setigera* (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Syn.: *Specklinia zephyrina* (Rchb.f.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 265, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-10 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 10-35 mm long including the petiole 3-15 mm long, 2.5-4.5 mm wide, the base narrowly cuneate into the petiolate base. **Inflorescence** a suberect, flexible, flexuous, loose, gradually lengthening, several-flowered raceme of successive flowers, 5-10 cm long including the peduncle 2-4 cm long, from near the middle of the ramicaul; floral bracts 0.5-1.5 mm long; pedicels 3-10 mm long; ovary 1 mm long; **sepals** translucent light yellow-green, more or less suffused with purple in stripes along the veins, glabrous (occasionally with a bristle), membranous, narrowly ovate, acute, acuminate-caudate, the tails as long as or longer than the blade, the dorsal sepal 6-8 mm long, 1-2 mm wide, the lateral sepals free to near the base, oblique, 6-8 mm long, 1-2 mm wide; **petals** translucent, often with the midvein purple, elliptical-ovate, variously lacerate below the middle, 3-4 mm long, 0.8-1.5 mm wide; **lip** purple, three-lobed, subpandurate, 1.8-3 mm long, 0.8-1.25 mm wide, the apex ovate, obtuse, more or less cellular-glandular, with the lateral lobes erect, subacute to obtuse or rounded, on the lower third, the disc shallowly channeled between calli from the lateral lobes, the margins of the revolute sides of the isthmus cellular to minutely lacerate, the base truncate, hinged to the column-foot; **column** slender, semiterete, 1.5-1.75 mm long, the foot short, thick, the anther, rostellum and stigma ventral.

Representative collections selected from hundreds:
COLOMBIA: **Santander**: Aspasica, *H. Wagener s.n.* (Holotype: W; Isotype: K), C. Luer illustr. 16997. **Antioquia**: sine loc., *Schmidtchen s.n.* (W); moist forest on Cerro Plateado, west Andes of Antioquia, alt. 1800-2000 m, Oct. 1891, *F.C. Lehmann 7085* (K); west Andes of Antioquia, alt. 2800 m, *F.C. Lehmann 8206* (holotype of *P. lauta* destroyed at B; lectotype here designated: AMES 14838). **Cundinamarca**: Monte Redondo near Quetame, alt. 1700 m, 27 July 1951, *M. Schneider 256* (S). **Magdalena**: Santa Marta, 1898-99, *H.H. Smith 2482* (holotype of *P. schistopetala*: US; isotypes: BR, K, NY), C. Luer

18803; Sierra Nevada de Santa Marta, Quebrada Indiana, alt. ca. 1600 m, 30 Aug. 1972, *J.H. Kirkbride, Jr. 2005* (US). **Cauca**: El Tambo, La Costa, *K. von Sneidern 813* (GB).
VENEZUELA: **Mérida**: Cerro San Isidro, above La Carbonera, alt. 2430-2475 m, 22 Apr. 1944, *J.A. Steyermark 56025* (AMES, VEN); La Montaña study area, south of La Montaña Teleférico station, alt. 2450-2650 m, 28 July 1995, *D. Kelly et al. 10443* (TCD). Sine loc., Sept. 1974, illustr. by *G.C.K. Dunsterville 1328*.
ECUADOR: **Carchi**: above La Esperanza, west of El Carmelo, alt. 3200-3450 m, 9 Apr. 1979, *B. Løjtnant, U. Molau & M. Madison 12054* (AAU, GB). **Sucumbíos**: between Tulcán and La Bonita, alt. 1990 m, 8 July 1990, *C.H. Dodson, E. Hagsater, D. Rubio & N. Rivera 18458* (MO). **Napo**: Río Chalpi between Papallacta and Baeza, alt. 2800 m, 6 May 1967, *B. Sparre 15892* (S); between Cuyuja and Papallacta, alt. 2800-2900 m, 5 June 1973, *L. Holm-Nielsen, S. Jeppesen, B. Løjtnant & B. Øllgaard 6888* (AAU). **Pichincha**: western slopes of Pichincha, Angué near Nanegal, alt. 6,000 ft., Mar. 1877, *F.C. Lehmann XXVIII* (holotype of *P. arachnantha*: W, illustr.); bare cliff, valley of Lloa, *A. Sodiro 28* (holotype of *P. fimbripetala*): presumably destroyed at B); sine loc., among Selaginellas, *W. Jameson s.n.* (holotype of *P. setigera*: K); Dos Novias between Aloag and Santo Domingo, alt. 2600 m, 21 Mar. 1967, *B. Sparre 14916* (S); Oyacachi, 2 Oct. 1999, *A. Hirtz, X. Hirtz & M. Evans 6645* (MO); Angué, near Nanegal, Sept. 1877, *F.C. Lehmann s.n.* (W); Dos Novias between Aloag and Santo Domingo, alt. 2600 m, 21 Mar. 1967, *B. Sparre 14916* (S). **Pastaza**: south of Puyo toward Macas, alt. 900 m, 28 Feb. 2001, *C. Luer, J. Luer & A. Hirtz 19559* (MO). **Azuay**: Sevilla de Oro, *G. Harling 1349* (GB); **Zamora-Chinchipe**: between Loja and Zamora, alt. 1600 m, 21 Apr. 1973, *L. Holm-Nielsen, S. Jeppesen, B. Løjtnant & B. Øllgaard 4017* (AAU); above Valladolid toward Yangana, alt. 2300 m, 1 Feb. 1985, *G. Harling & L. Andersson 21421* (GB).
BOLIVIA: **La Paz**: Sud Yungas, Hacienda Casana, alt. 1400 m, Jan. 1923, *O. Buchtien 7217* (holotype of *P. bulbophylloides* destroyed at B, lectotype here designated: US); between Caranavi and Bella Vista, alt. 1300 m, Aug. 1991, *A. Hirtz 5574* (MO); Murillo, along Río Zongo, alt. 2800 m, 30 Jan. 1988, *C. Luer, J. Luer, J. Solomon & R. Vásquez 12965* (MO).

This concept, treated here as *Muscarella zephyrina*, consists of numerous, intergrading populations. It is common and widely distributed in the Andes. All are basically similar, with varying degrees of fimbriations of the petals, and lobes of the lip, those of no two populations being identical. Several populations have acquired specific epithets. Most are too similar to be recognized, but some have evolved sufficiently to be specifically distinct. The Central American counterpart, *M. quinqueseta* (Ames) Luer, differs in having flowers with the tails, especially those of the petals, being much longer.

The tufts of small, narrowly obovate leaves surpassed by a loose, flexuous raceme of successive flowers are similar to many species in the Pleurothallidinae. The sepals are glabrous, acute and acuminate into tails about as long as the blade. The petals are elliptical with long-fringed margins with the apex contracted into a slender tail about as long as the blade. Variations of the fimbriations led to the descriptions of *Pleurothallis fimbripetala* Schltr., *P. lauta* Schltr. and *P. schistopetala* Schltr.

The lip is more or less pandurate-trilobed with a central constriction, or isthmus, and with the apex obtuse or rounded. In the lower third below the constriction, the margins of the lip are erect to form subacute, obtuse to rounded, lateral lobes. The disc is superficially channeled between a low pair of calli that course forward from the lateral lobes and across the central constriction. The most variable feature of the lip is the margin at the isthmus. It is variously cellular, to ciliate, to fimbriate, varying in degrees in the various populations. The isthmus of the lip is fimbriate in the variation described as *Pleurothallis lauta* Schltr., but glabrous in the variations described as *P. fimbripetala* Schltr. and *P. schistopetala* Schltr. All degrees of intermediate variations are seen.

Pleurothallis bulbophylloides Schltr. almost certainly belongs here. The peduncle was published as being five millimeters long, no doubt a typographical error for five centimeters. The flower of the lectotype is in very poor condition, but identifiable.

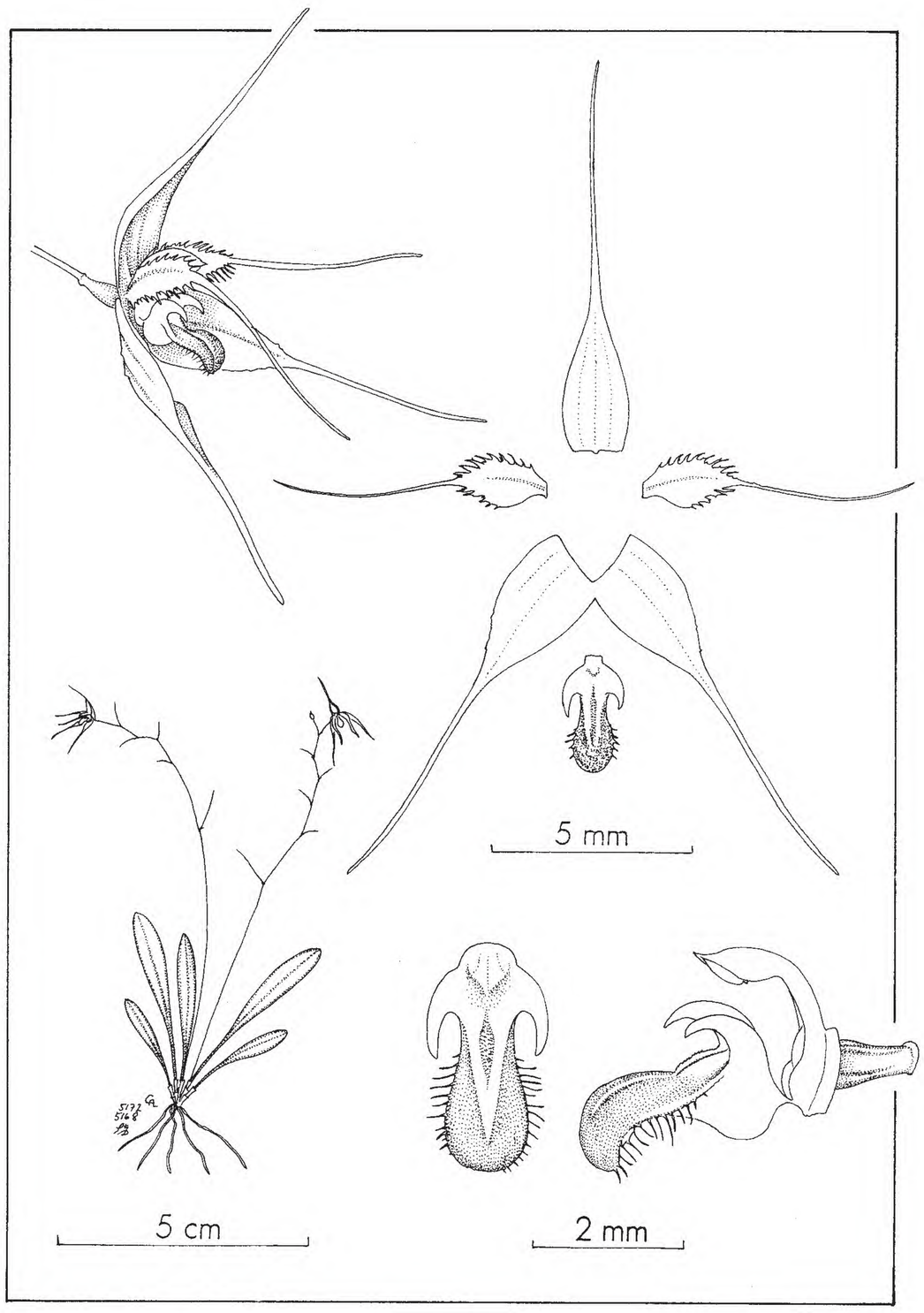


Fig. 48. Muscarella ancora

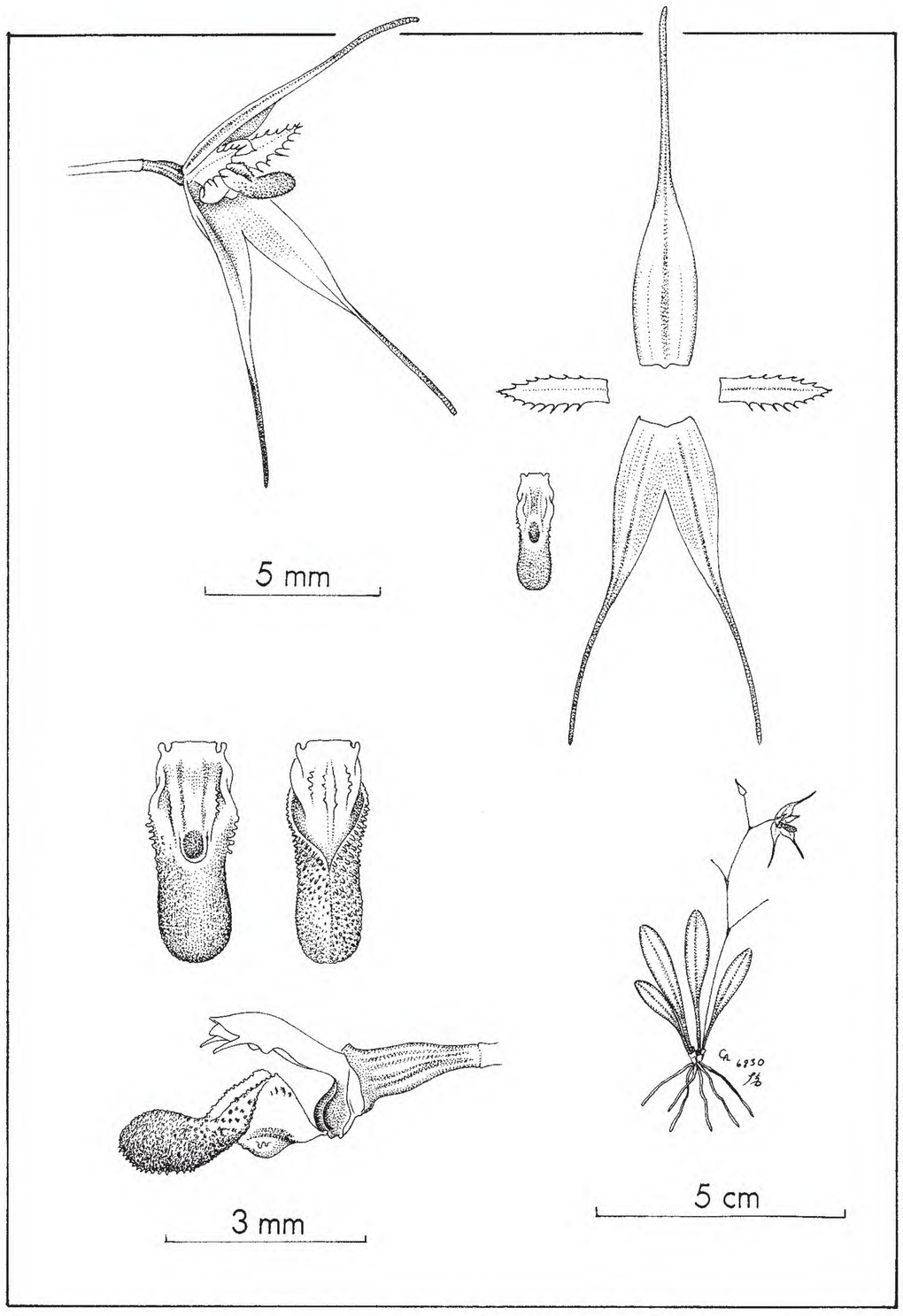


Fig. 49. Muscarella aristata

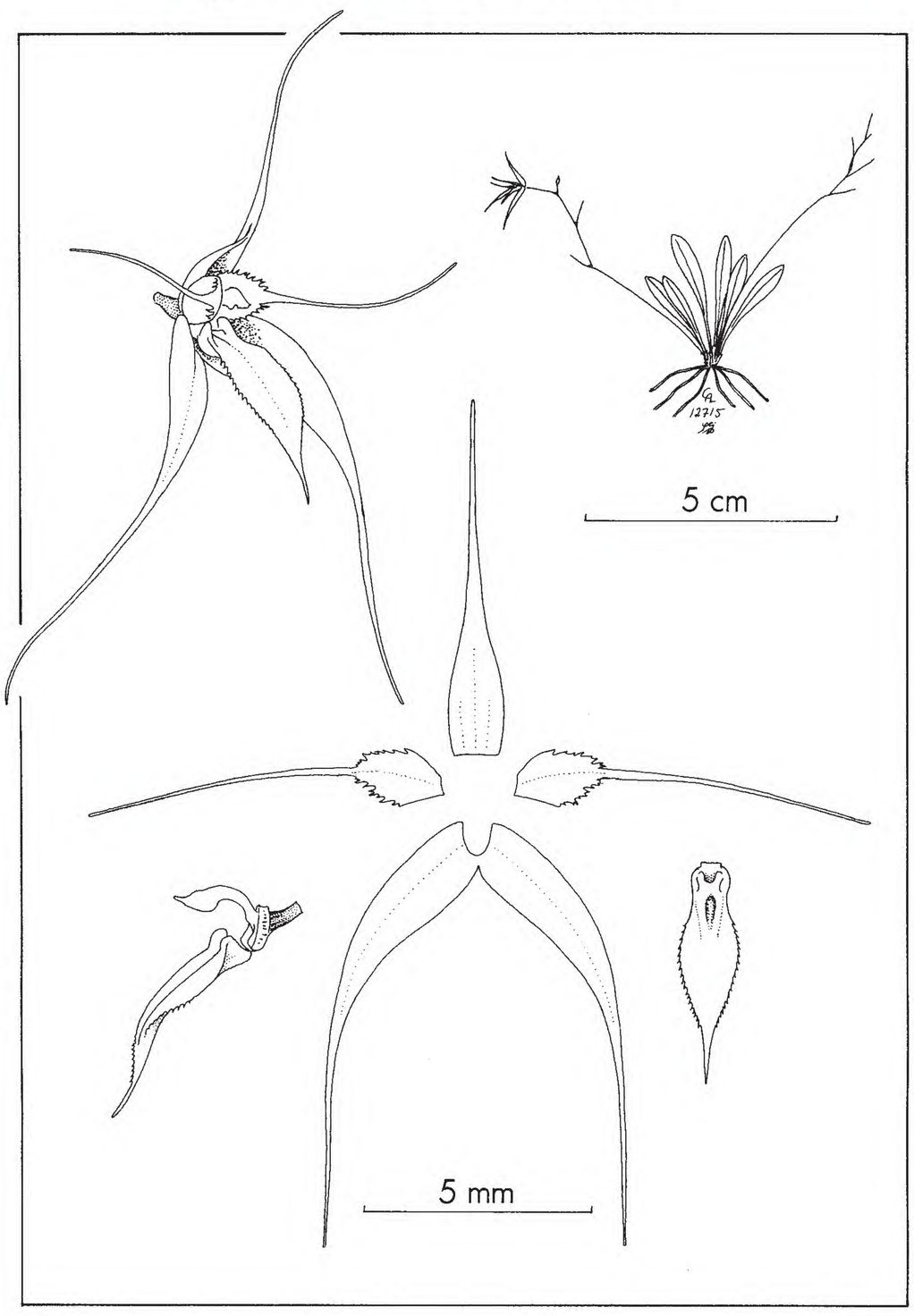


Fig. 50. Muscarella catoxys

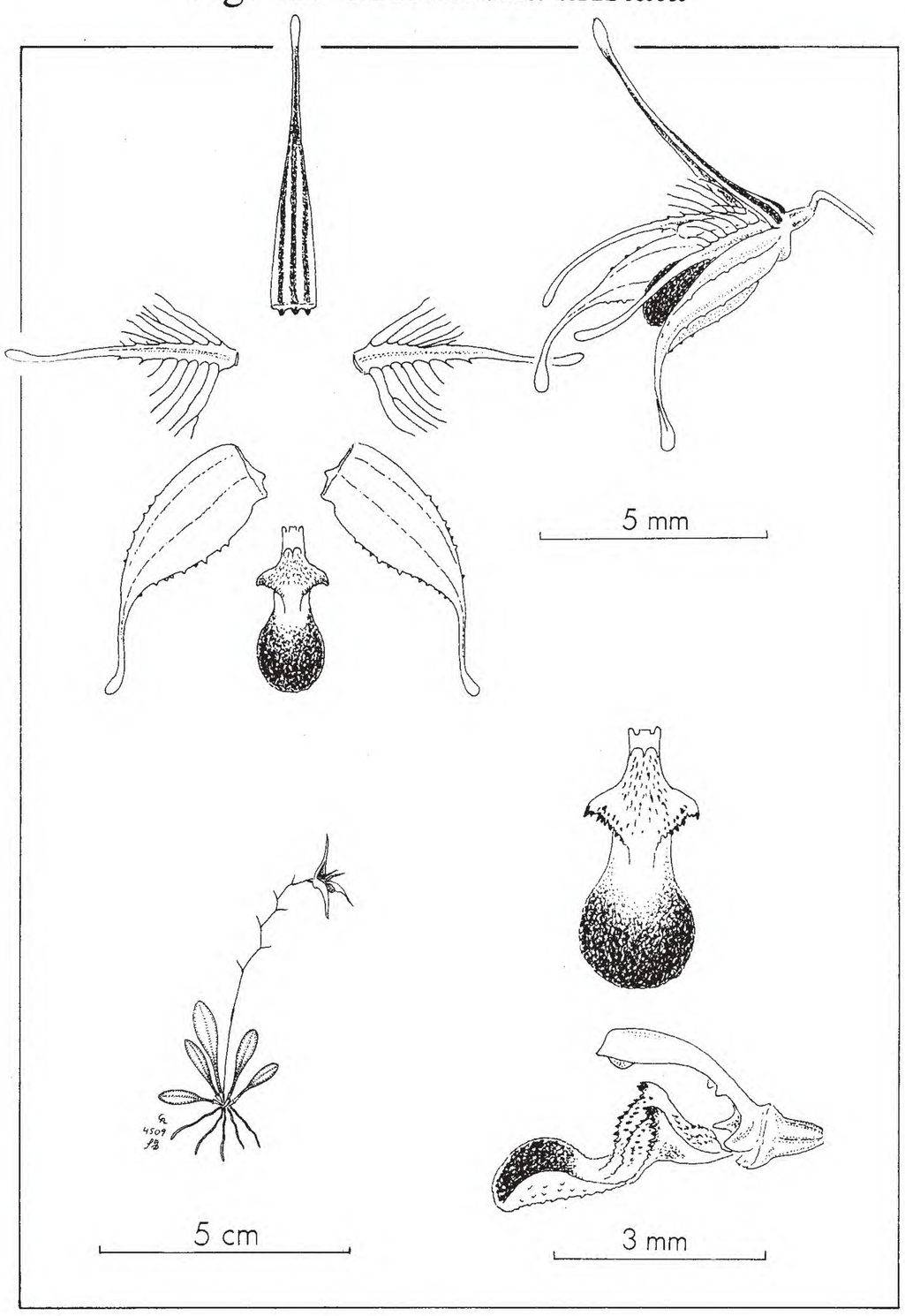


Fig. 51. Muscarella cestrochila

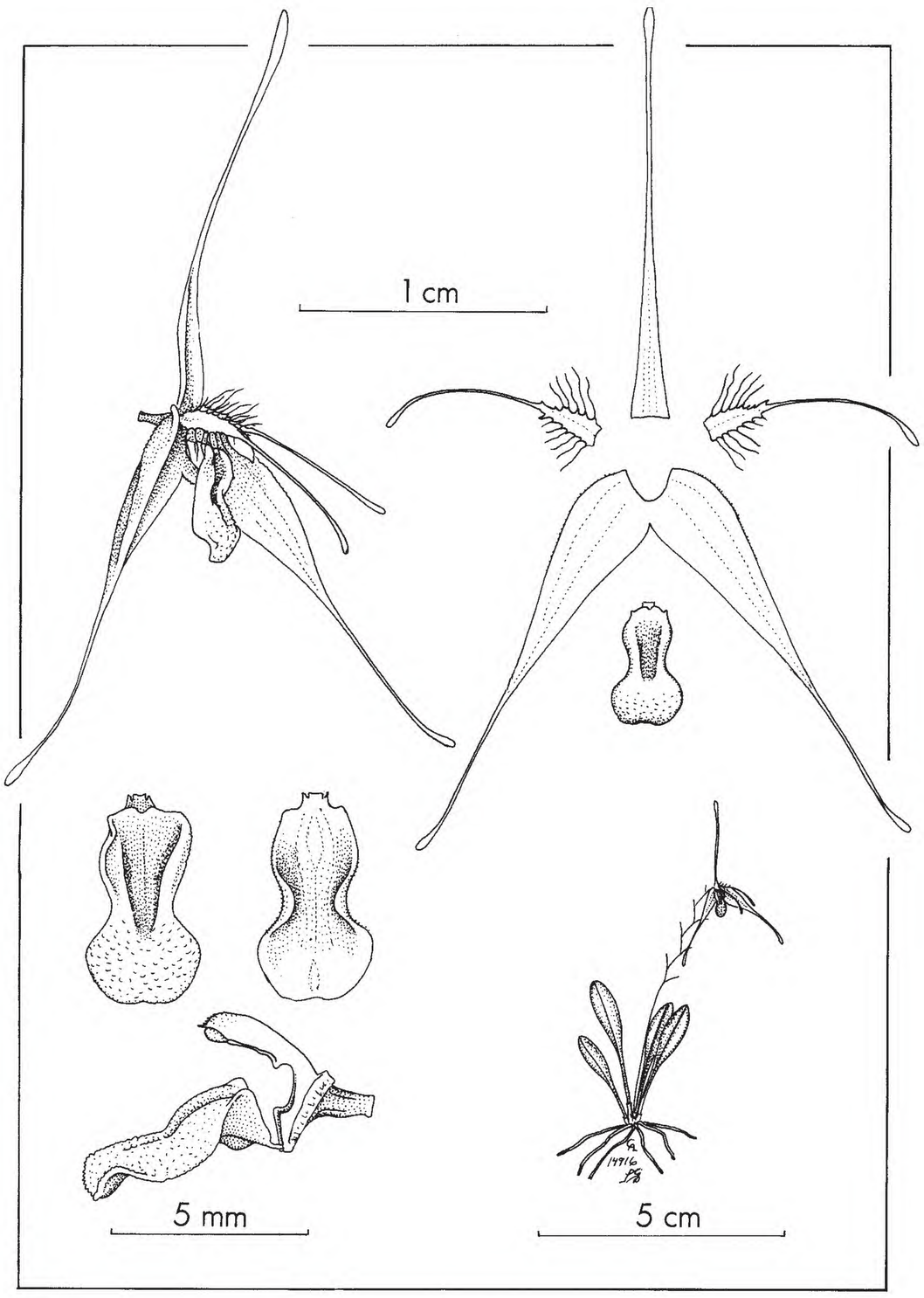


Fig. 52. Muscarella claviculata

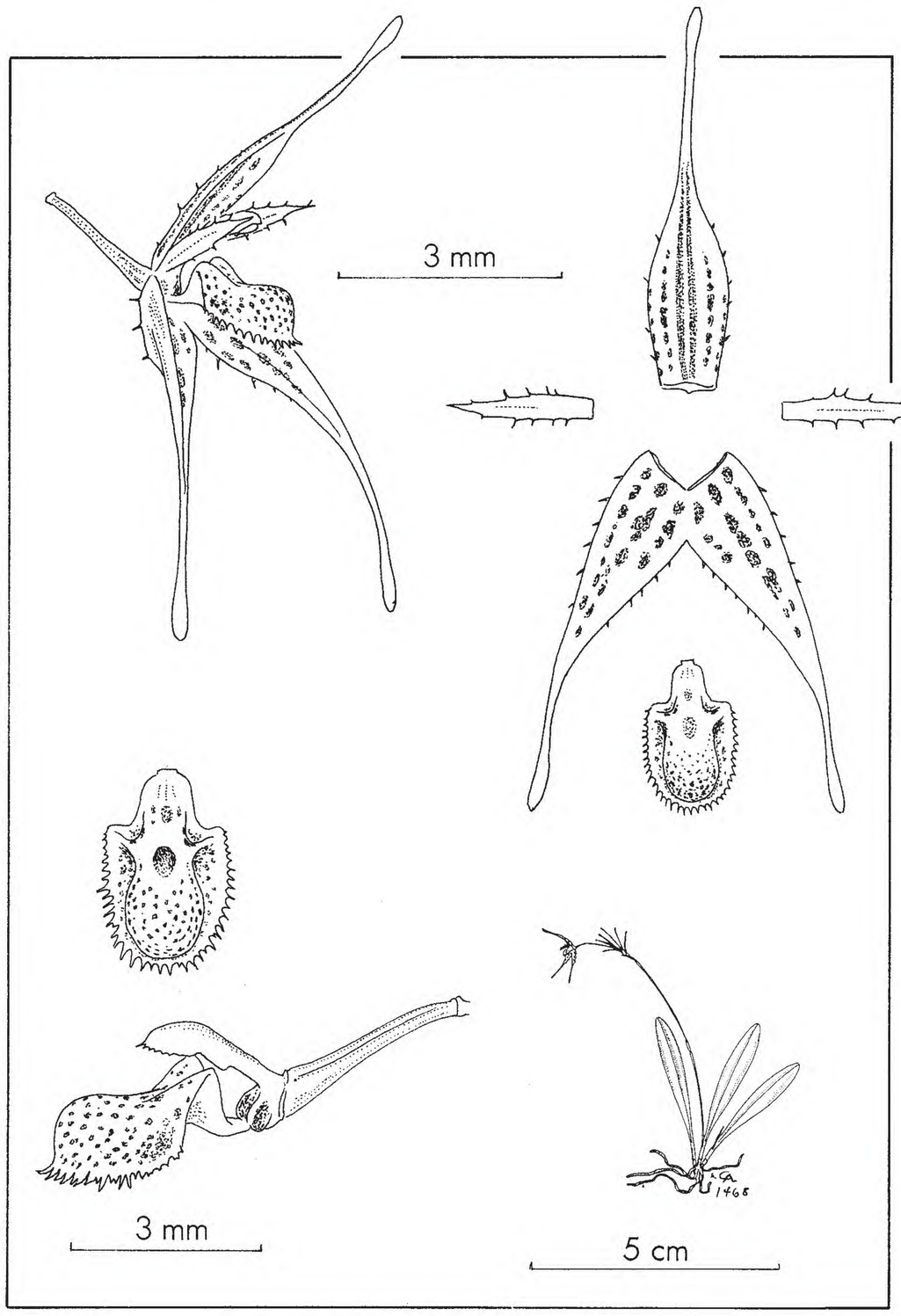


Fig. 53. Muscarella clavigera

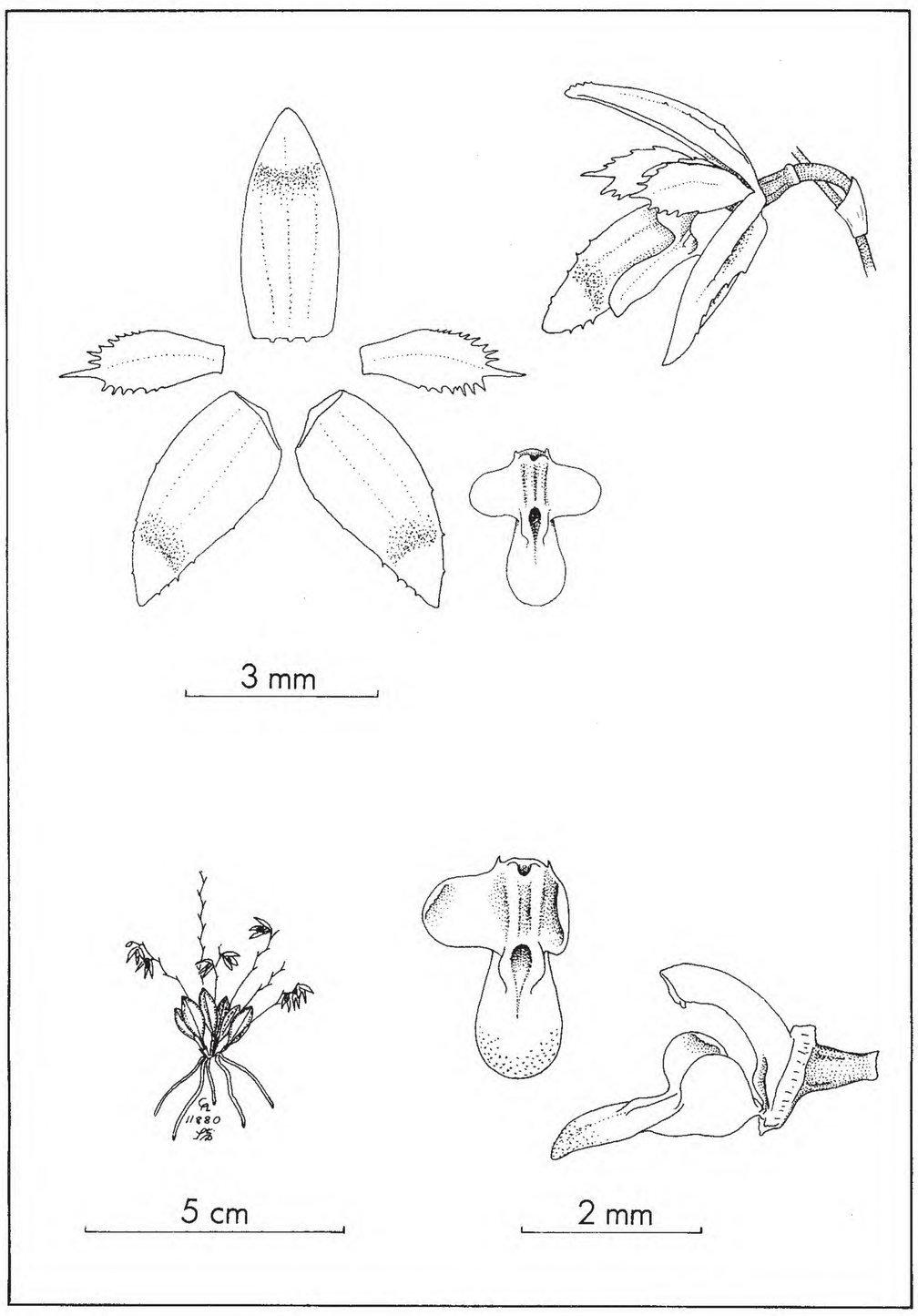


Fig. 54. Muscarella coeloglossa

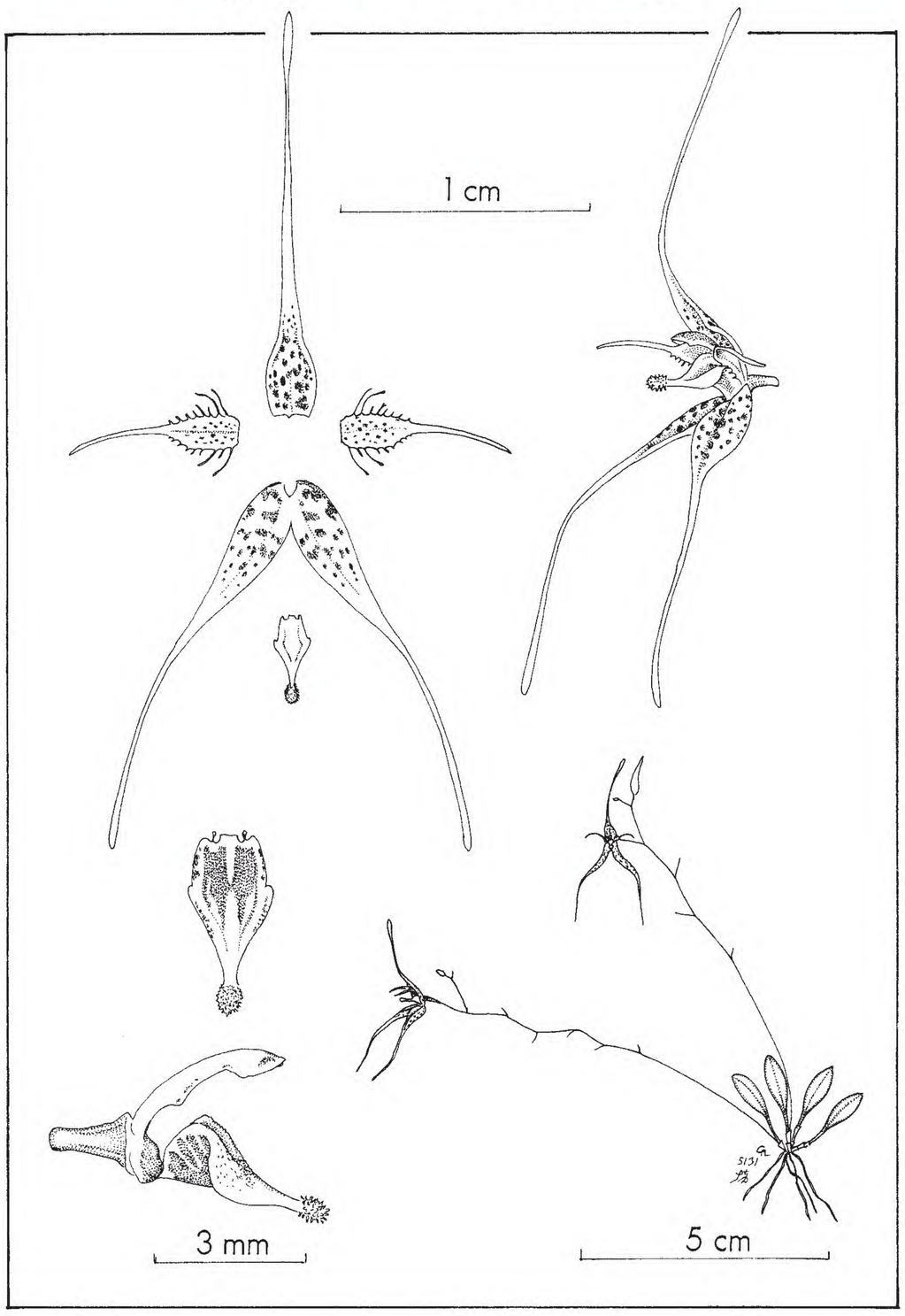


Fig. 55. Muscarella corynetes

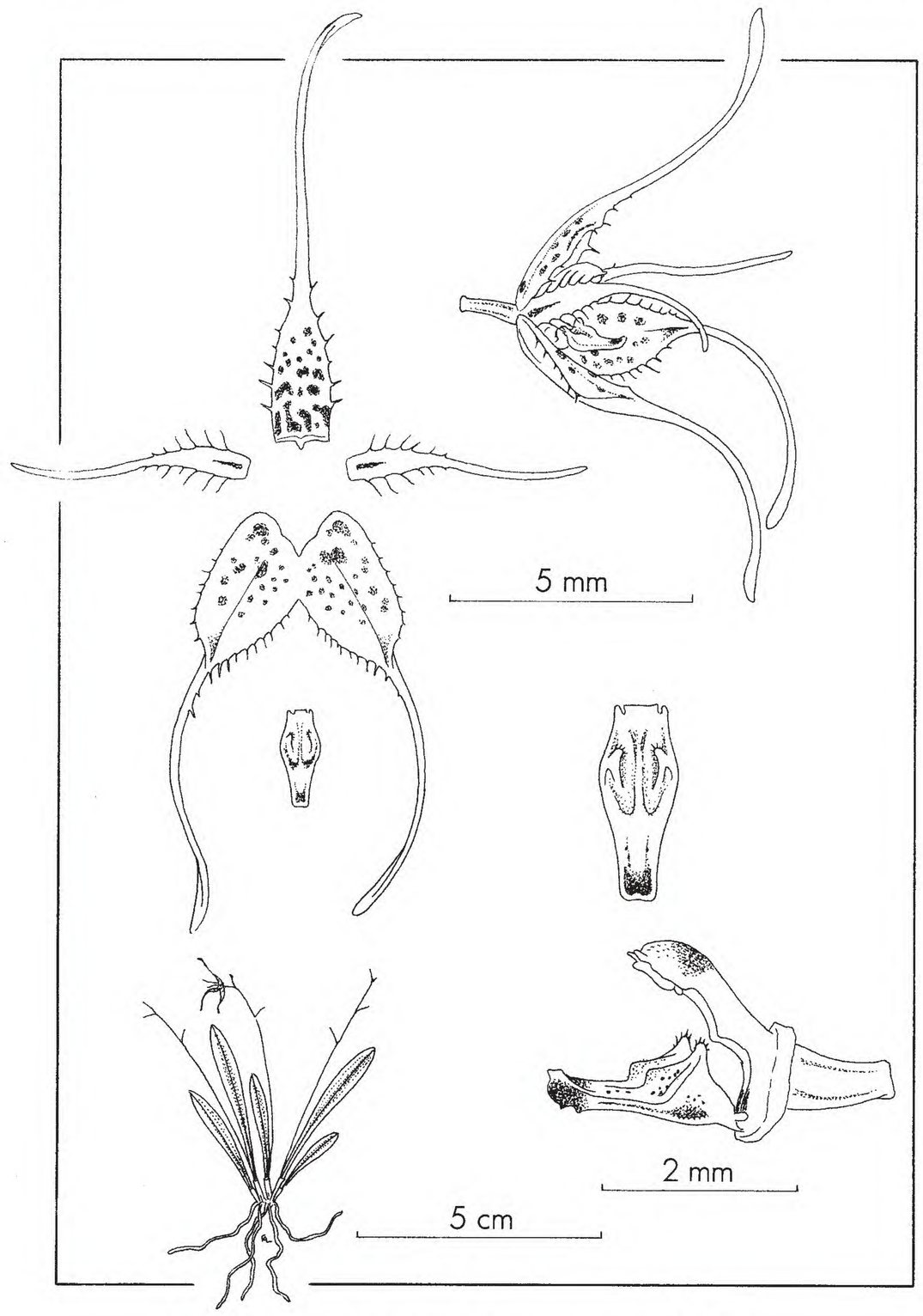


Fig. 56. Muscarella cynocephala

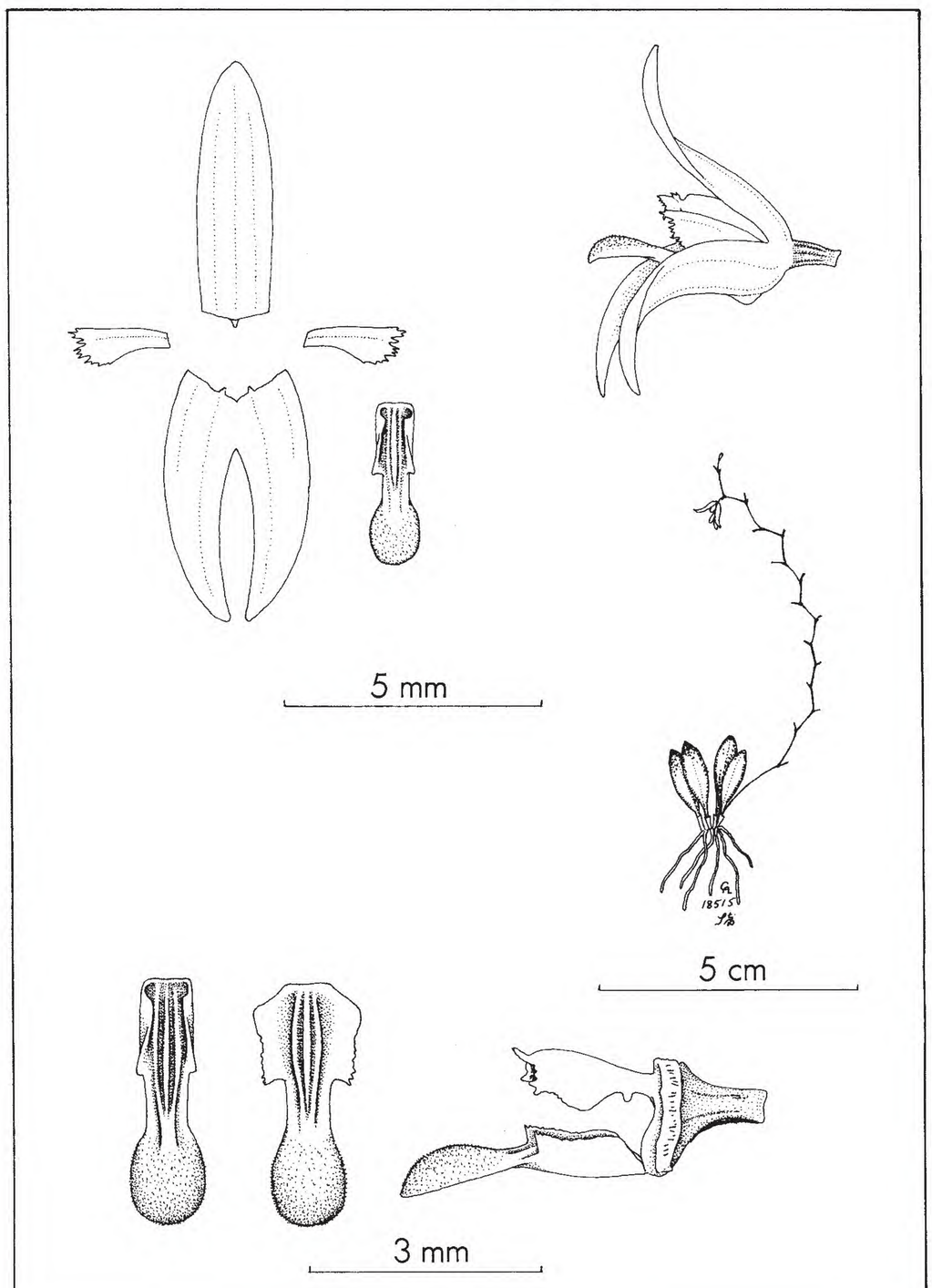


Fig. 57. Muscarella delicatula

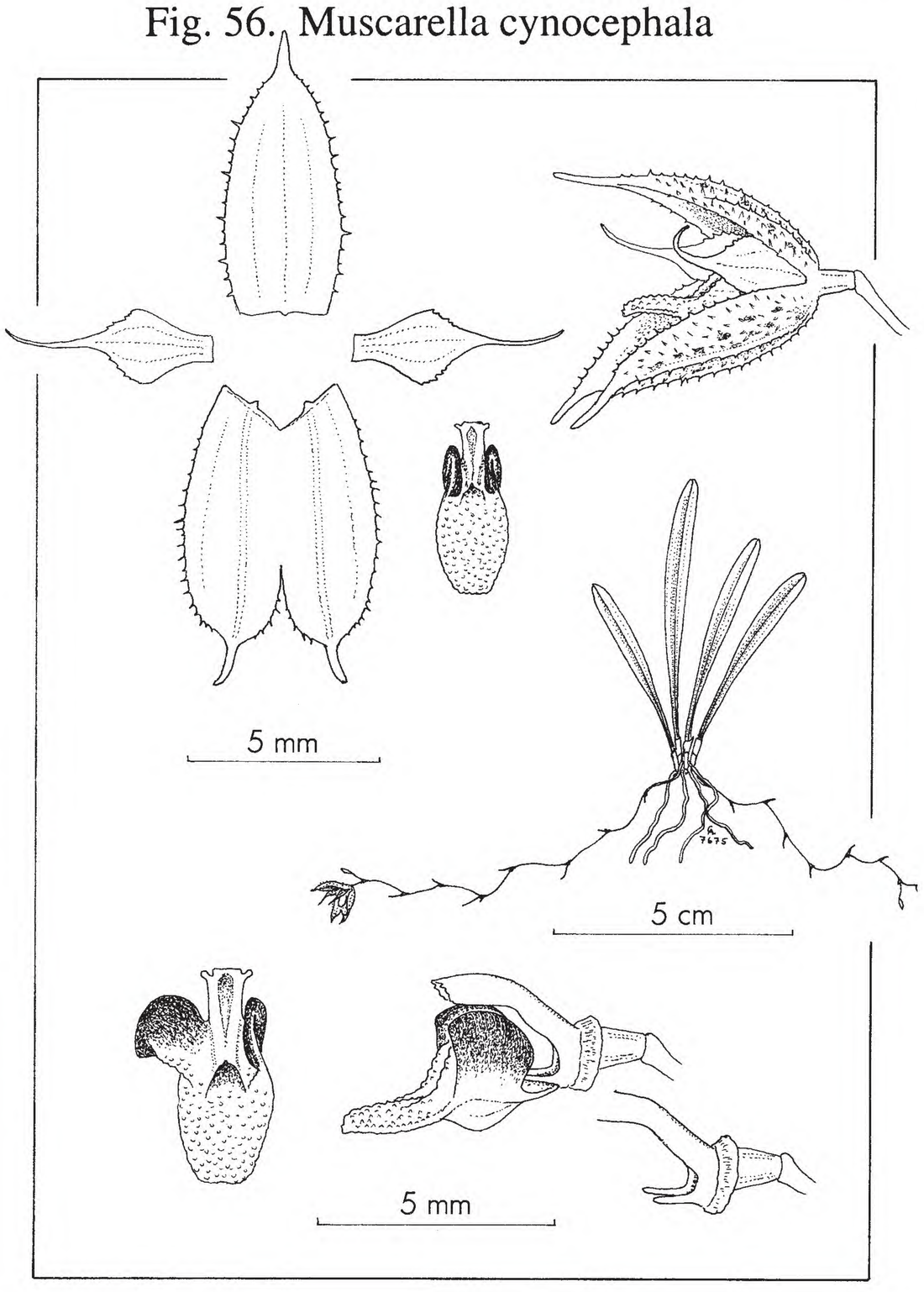


Fig. 58. Muscarella echinodes

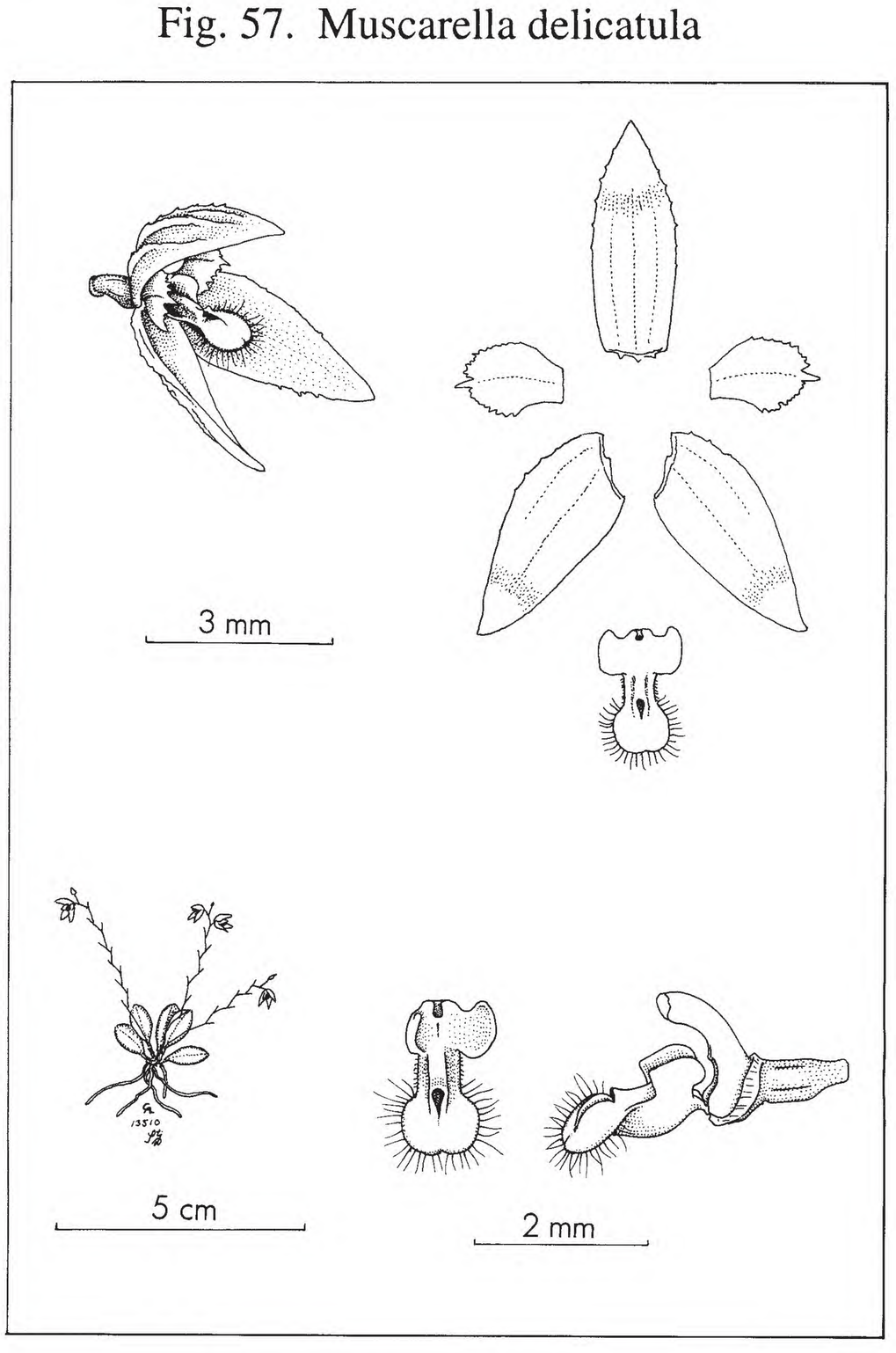


Fig. 59. Muscarella exesilabia

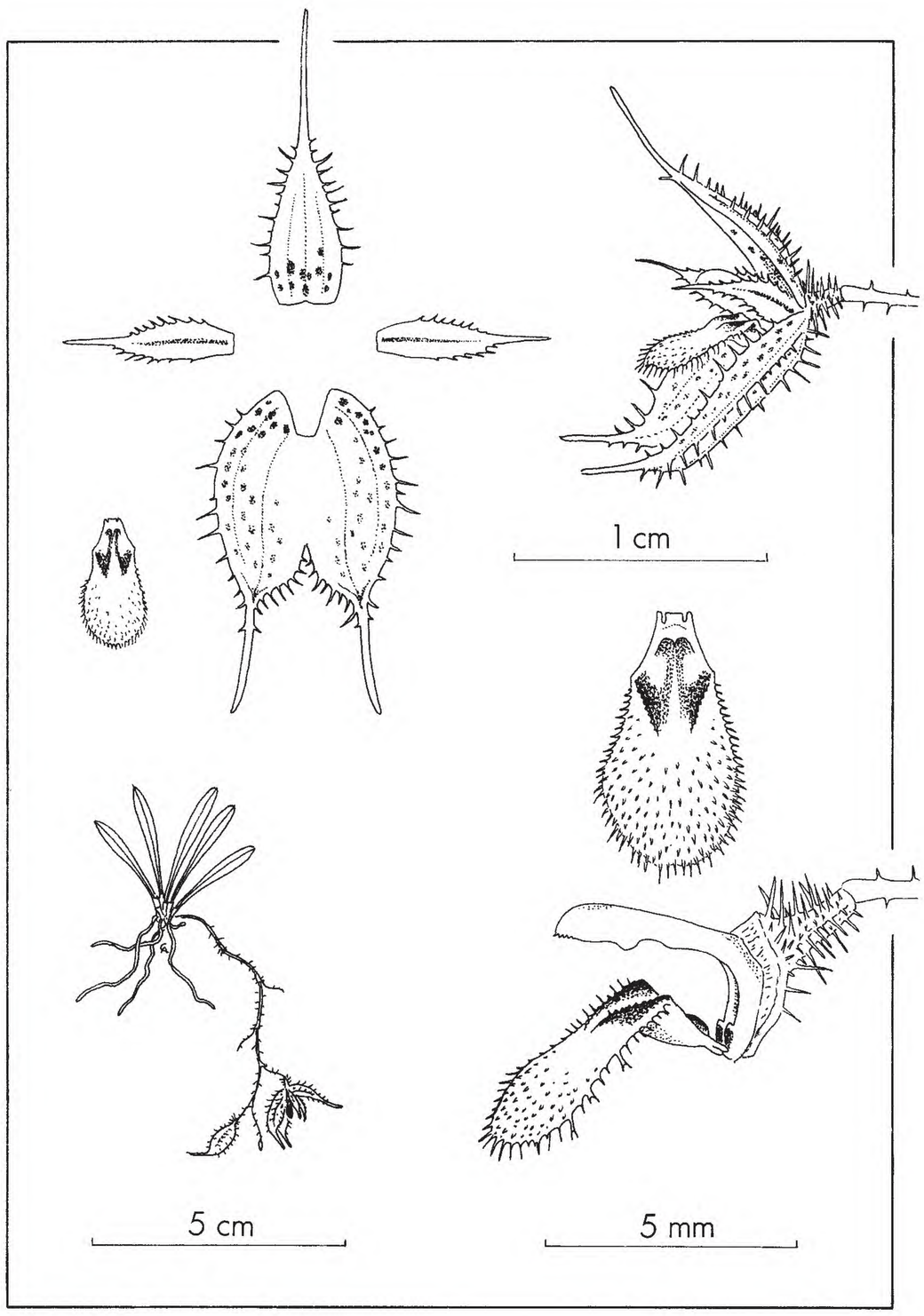


Fig. 60. Muscarella fimbriata

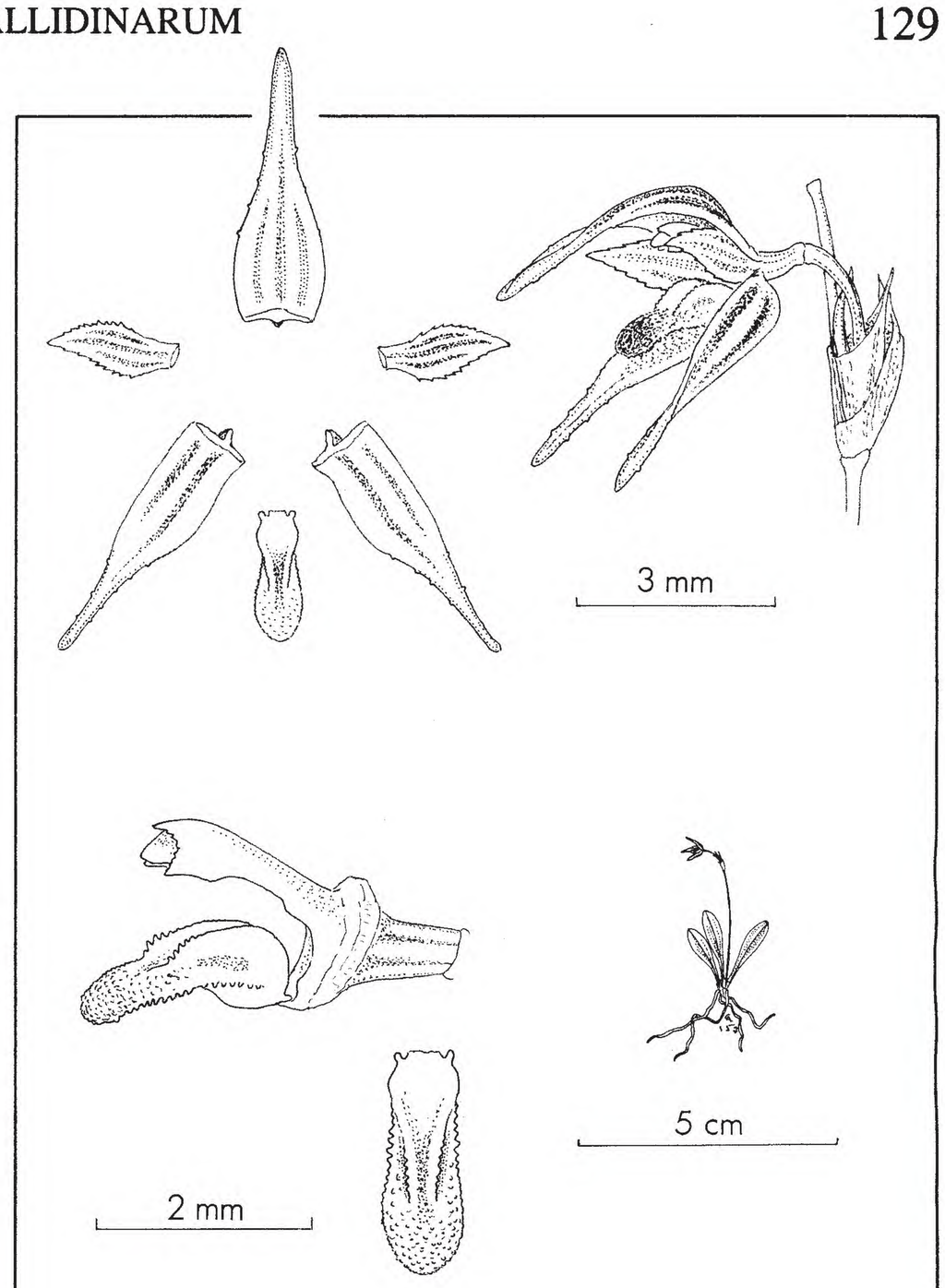


Fig. 61. Muscarella fuchsii

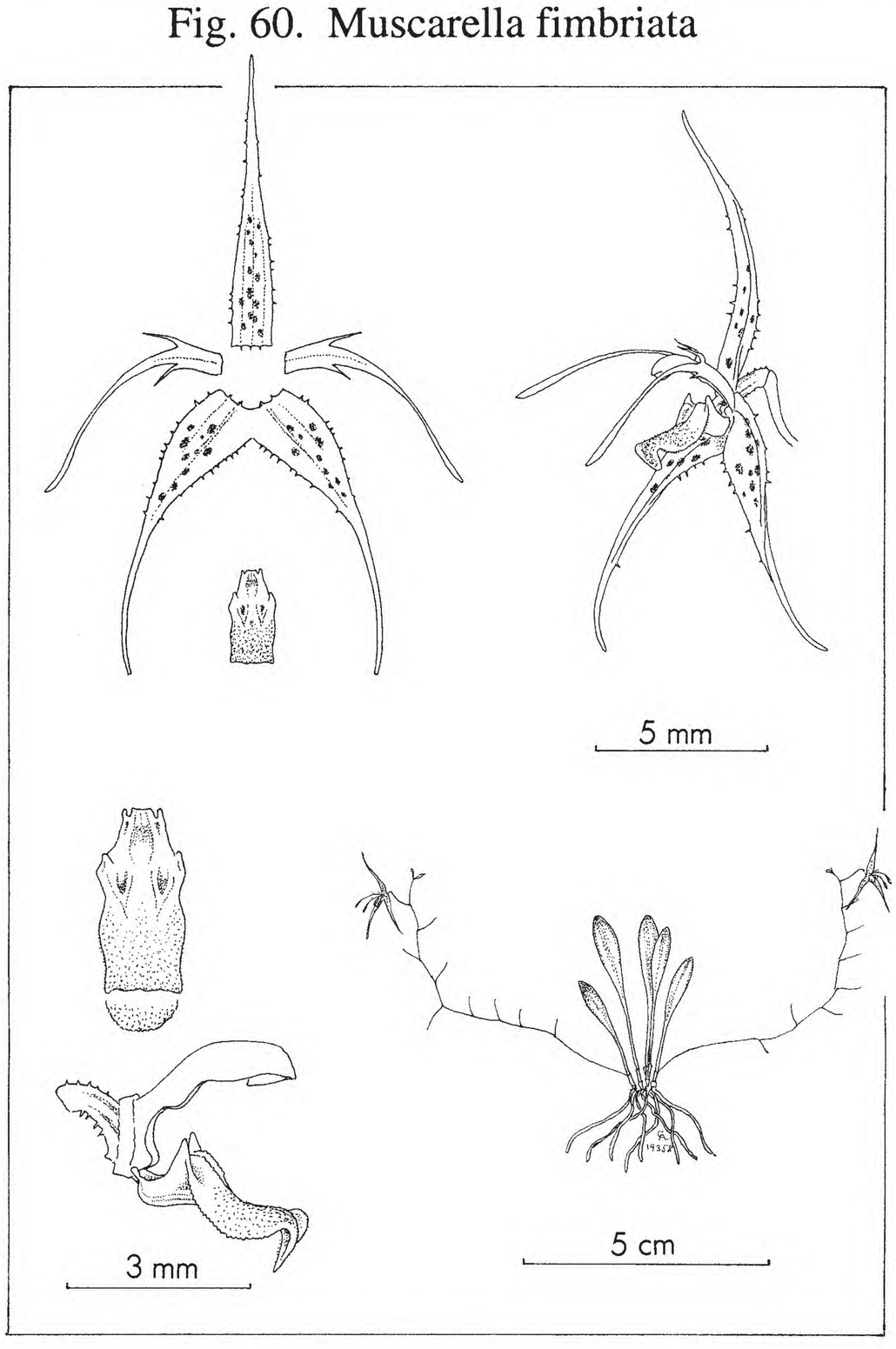


Fig. 62. Muscarella furcatipetala

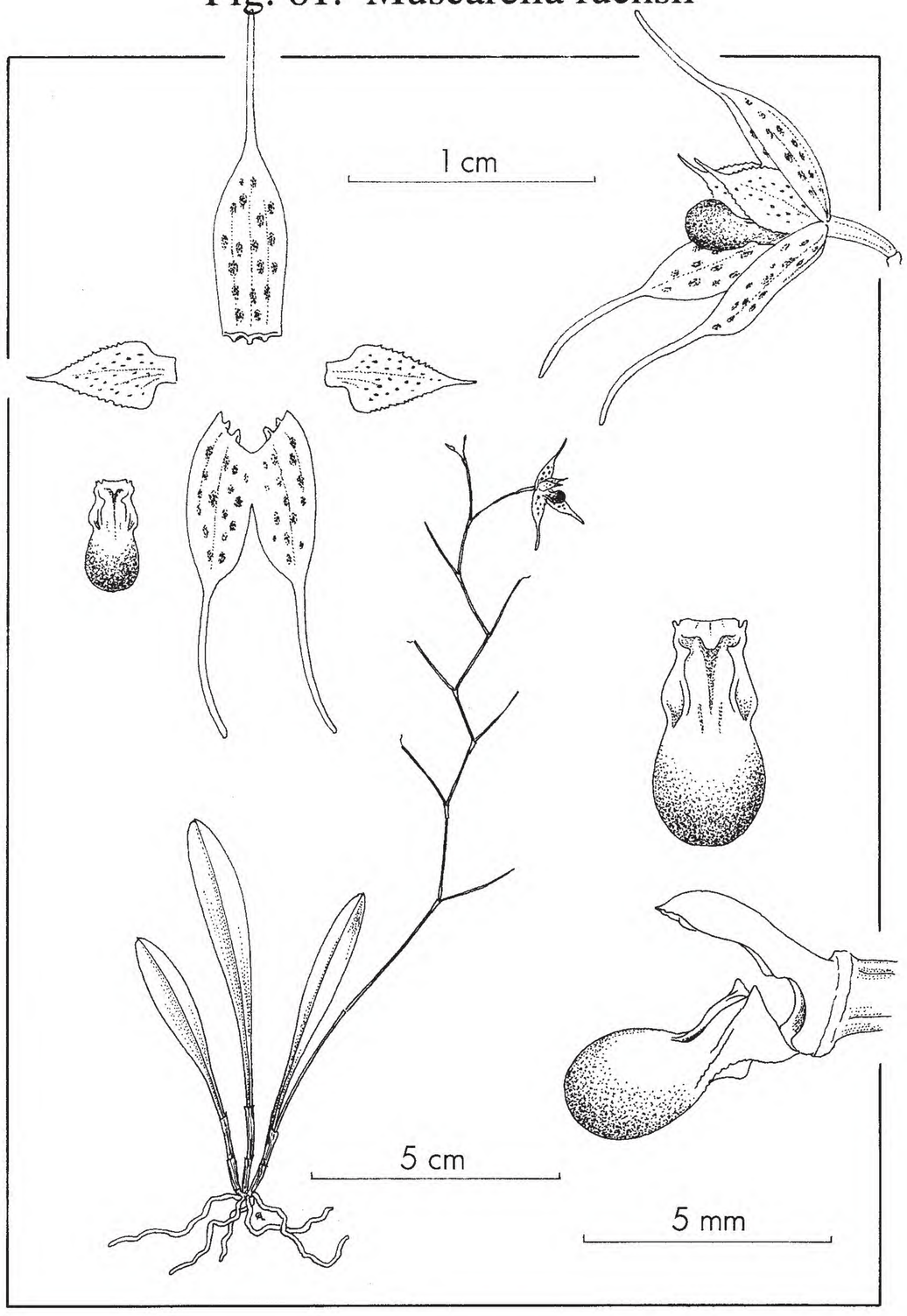


Fig. 63. Muscarella gongylodes

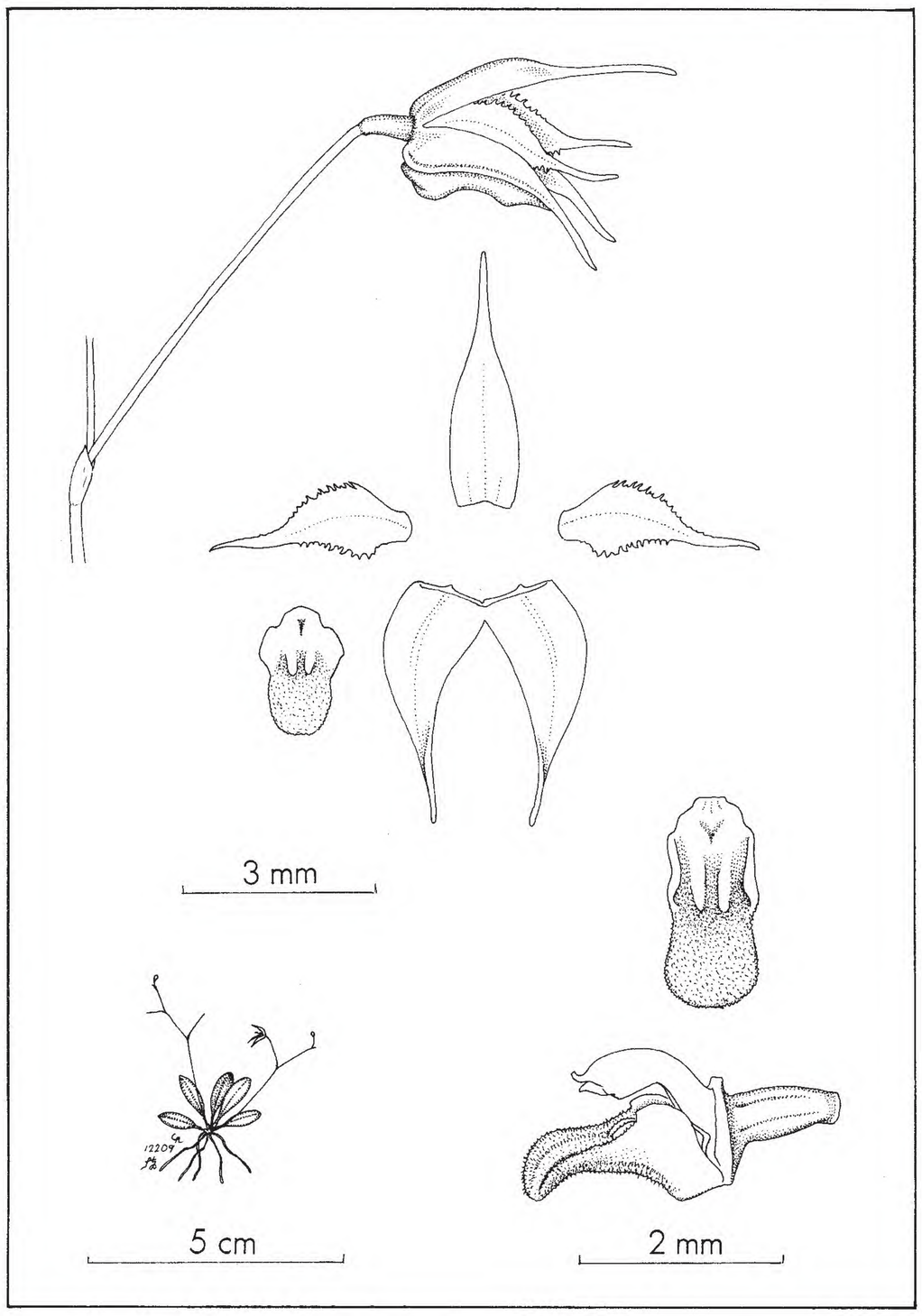


Fig. 64. Muscarella helenae

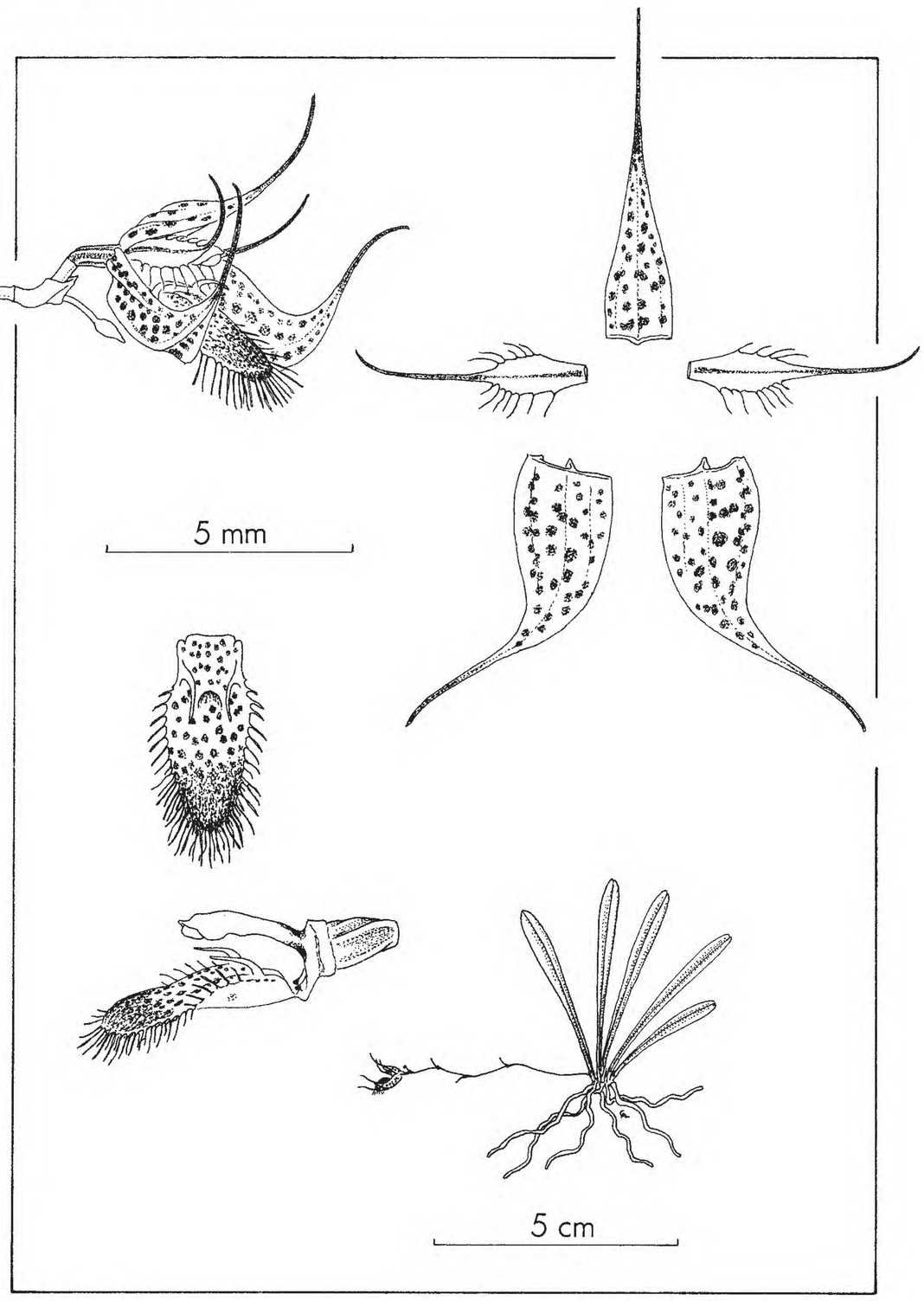


Fig. 65. Muscarella herpestes

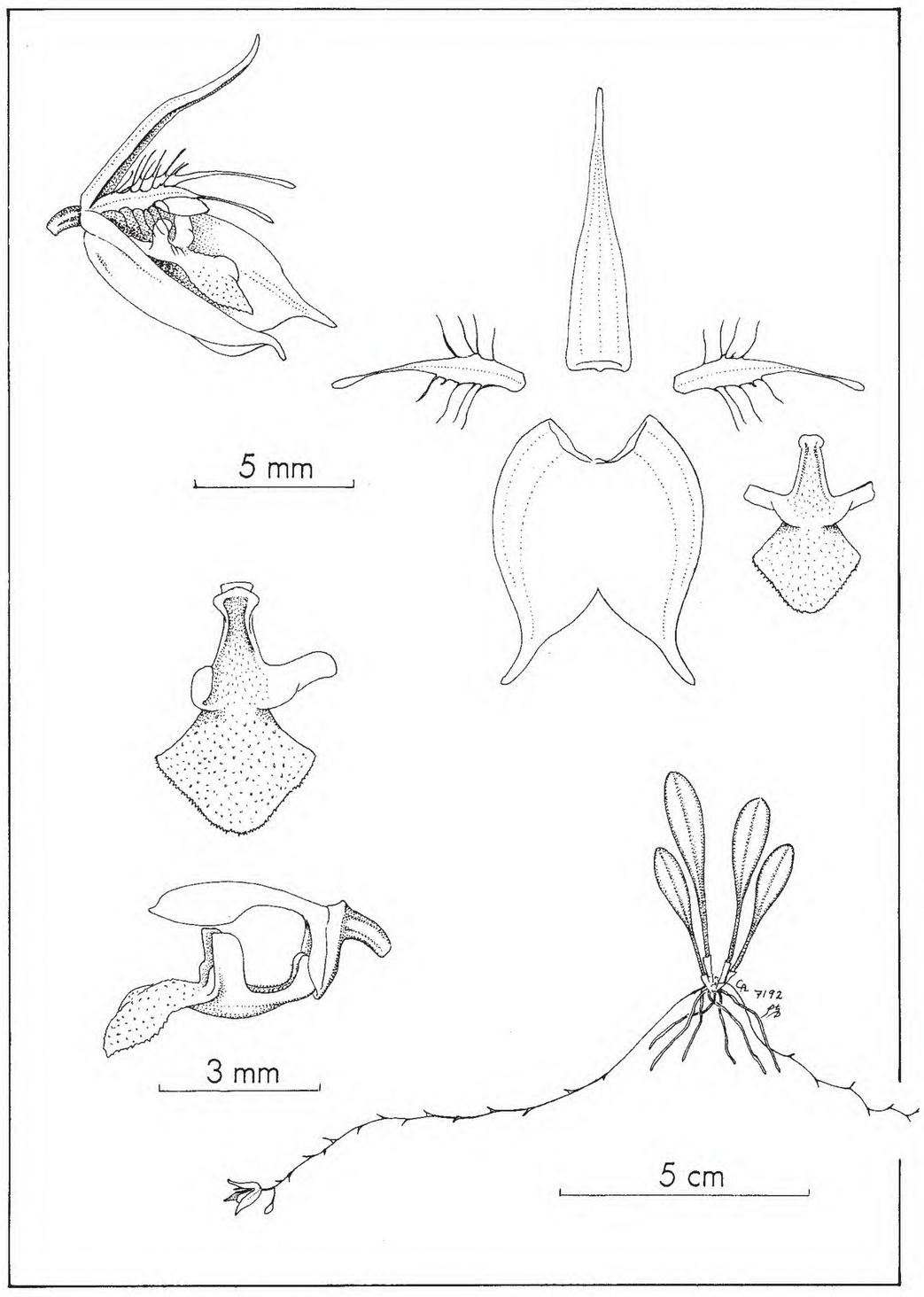


Fig. 66. Muscarella ichthyonekys

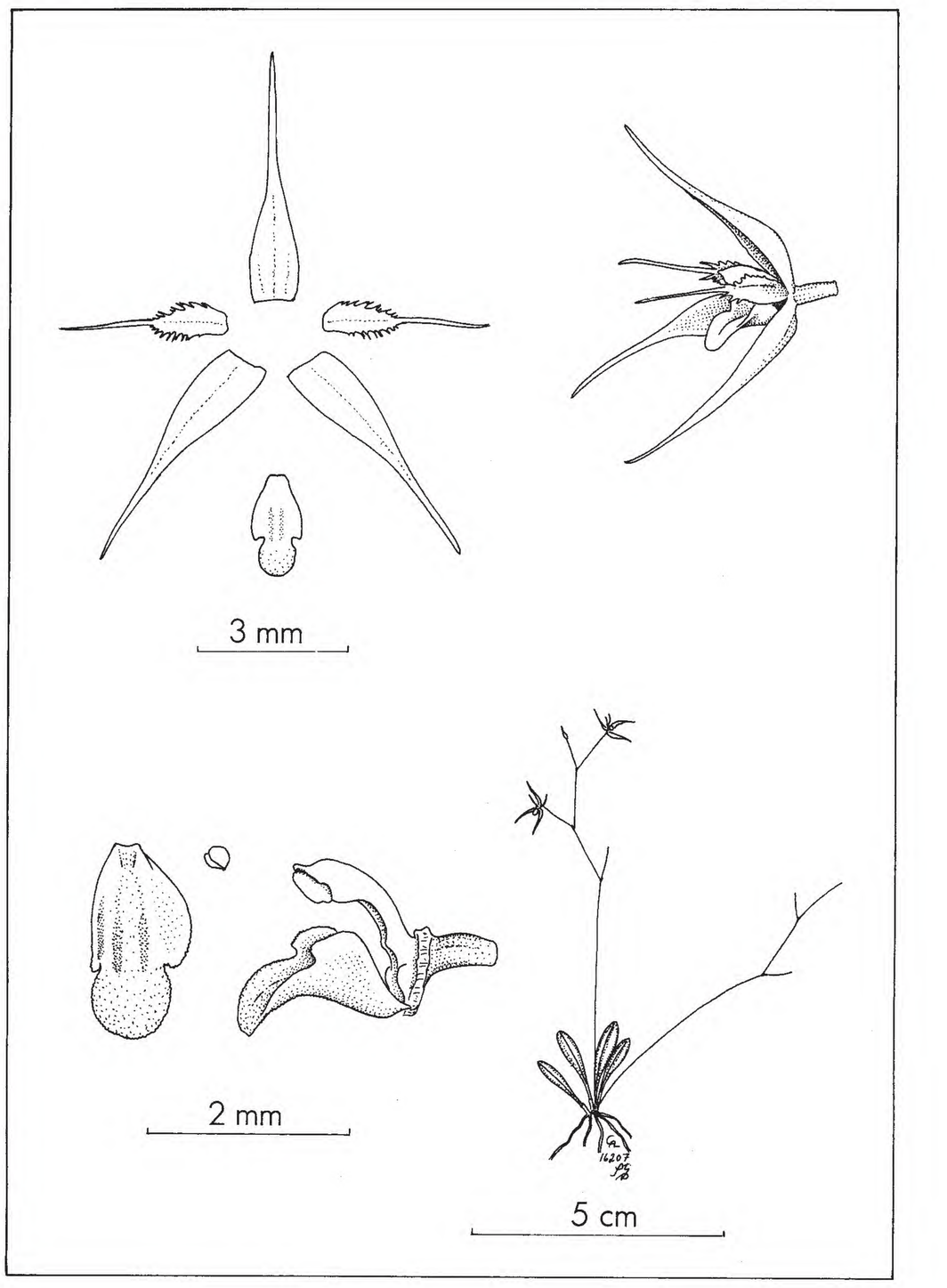


Fig. 67. Muscarella infinita

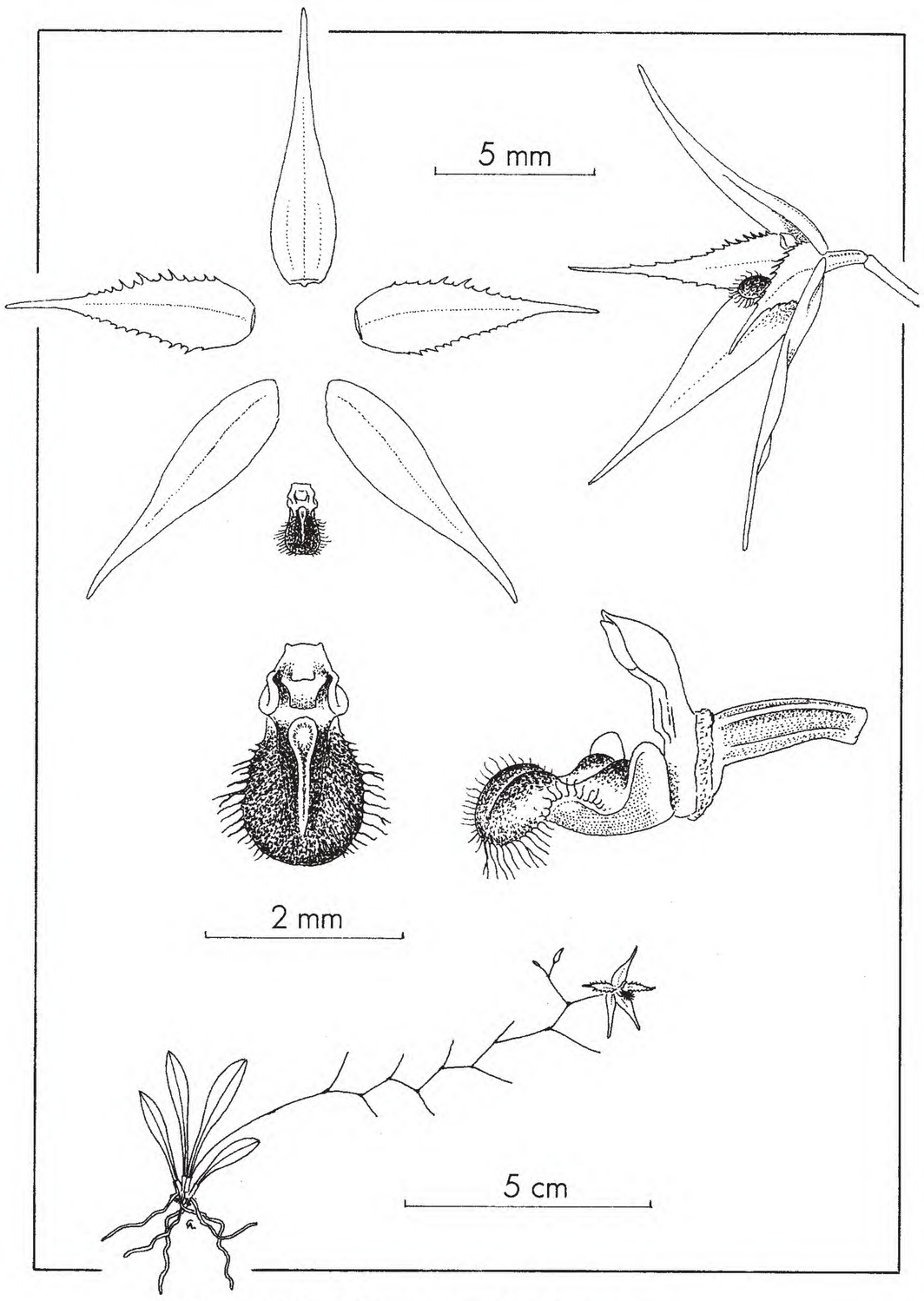


Fig. 68. Muscarella intonsa

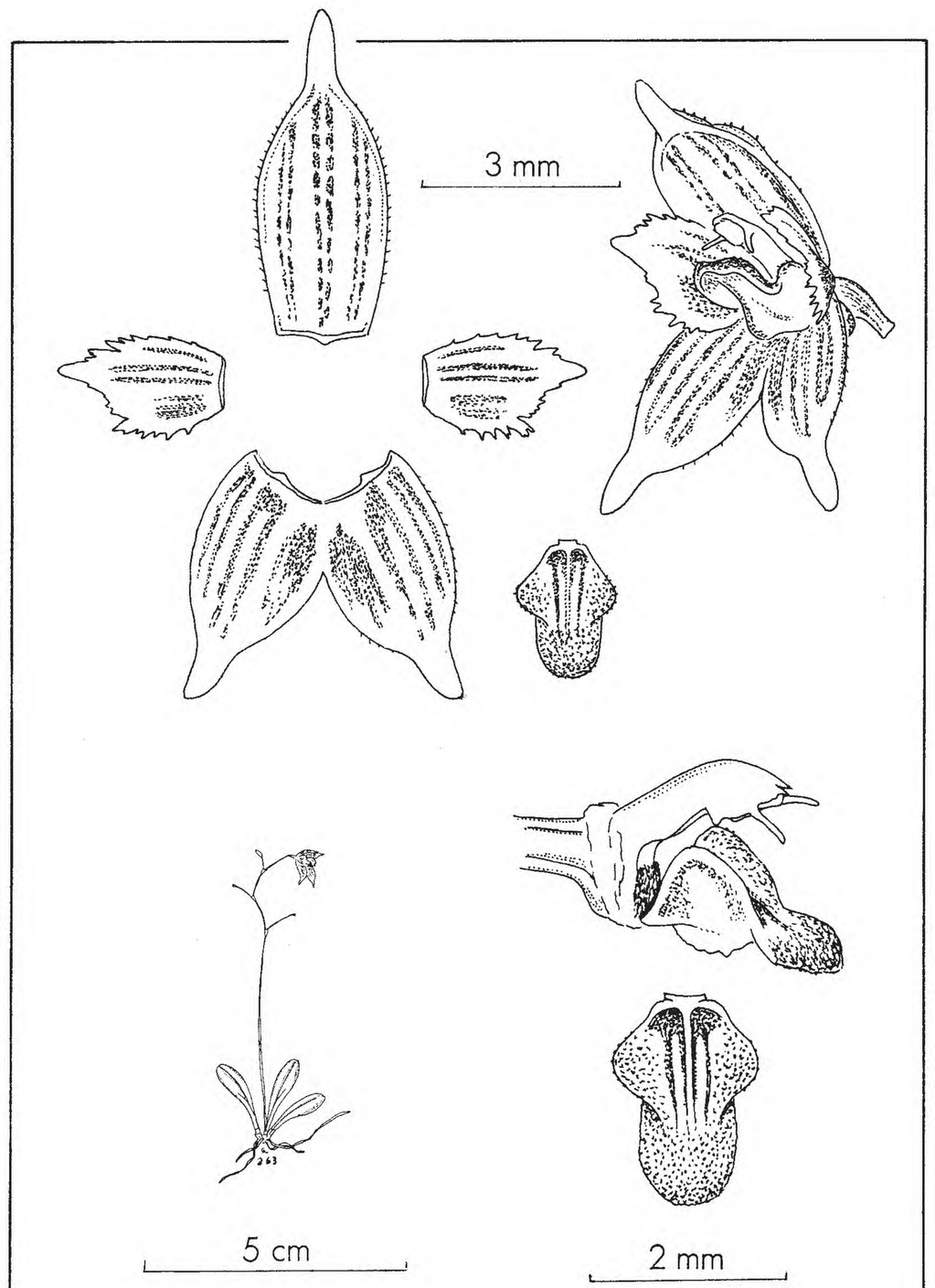


Fig. 69. Muscarella kennedyi

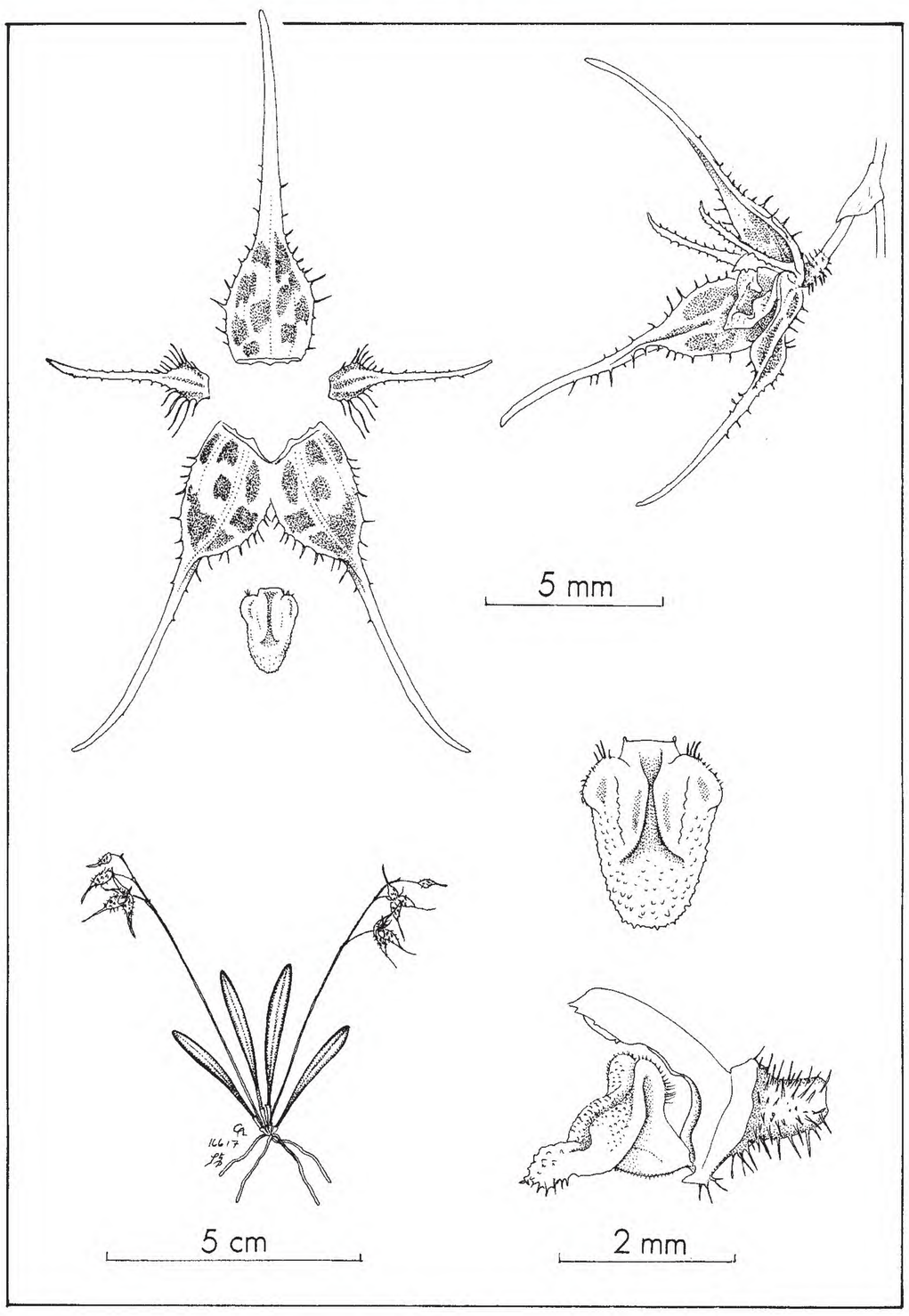


Fig. 70. Muscarella latilabris

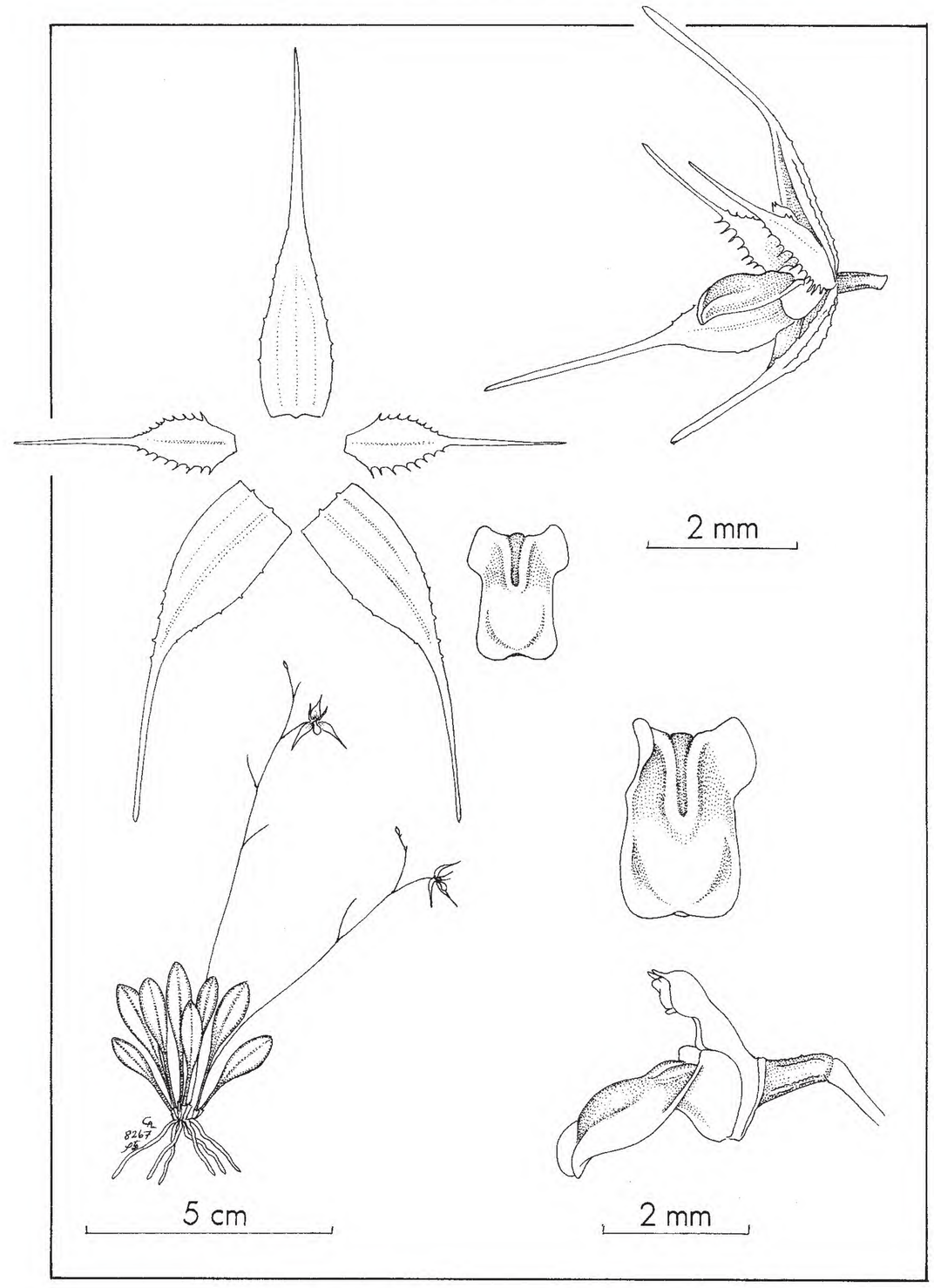


Fig. 71. Muscarella lipothrix

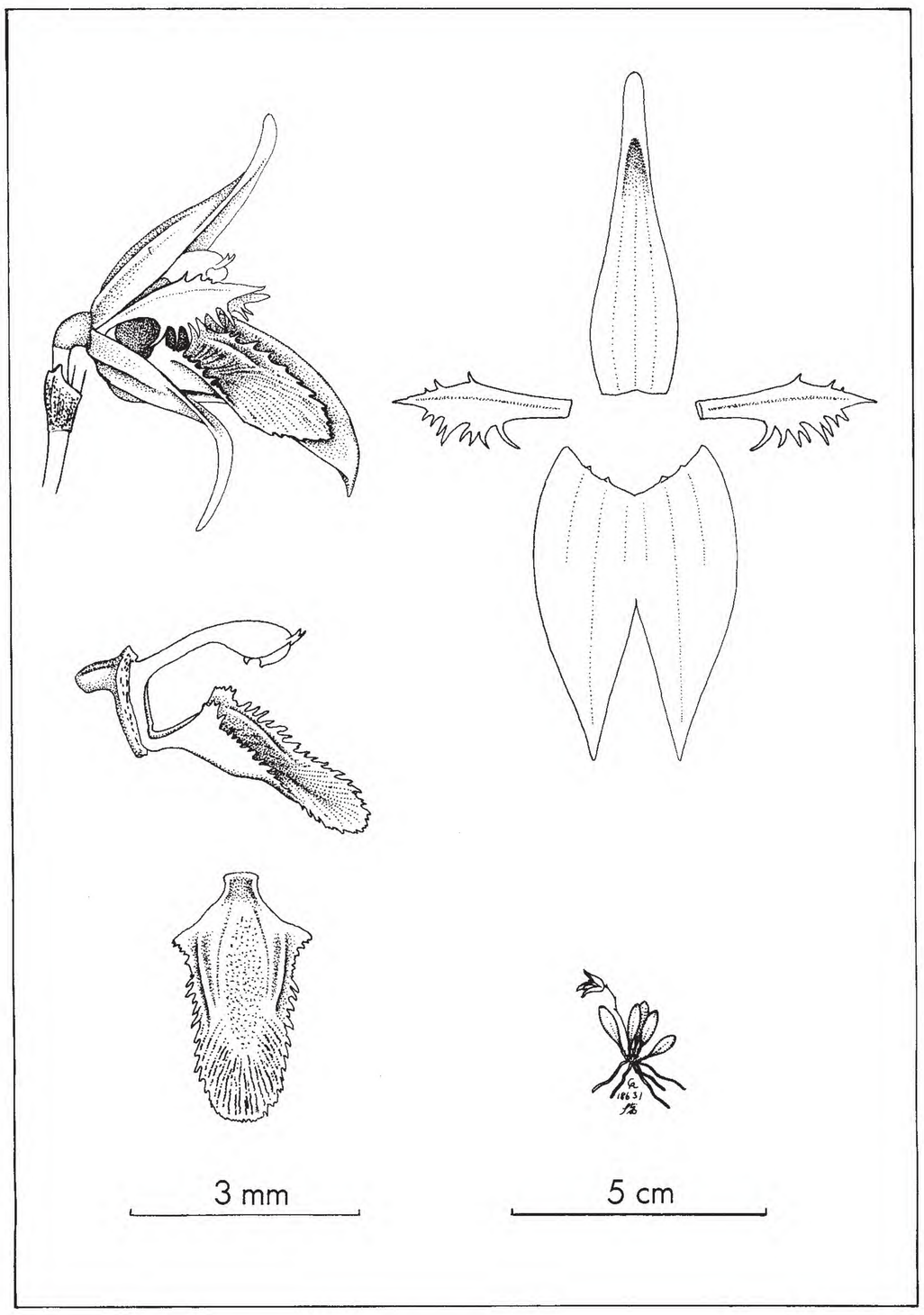


Fig. 72. Muscarella llamachoi

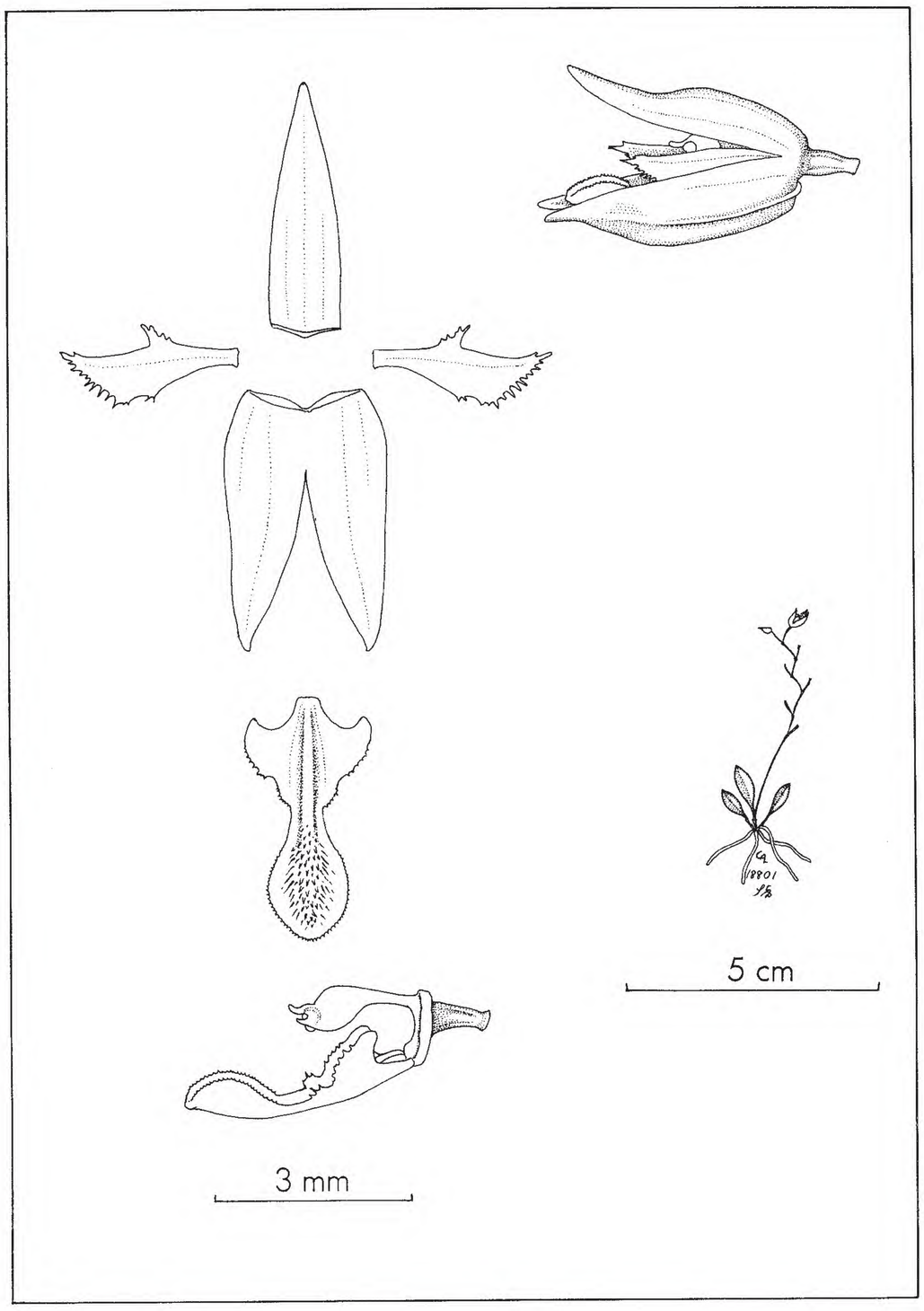


Fig. 73. Muscarella longilabris

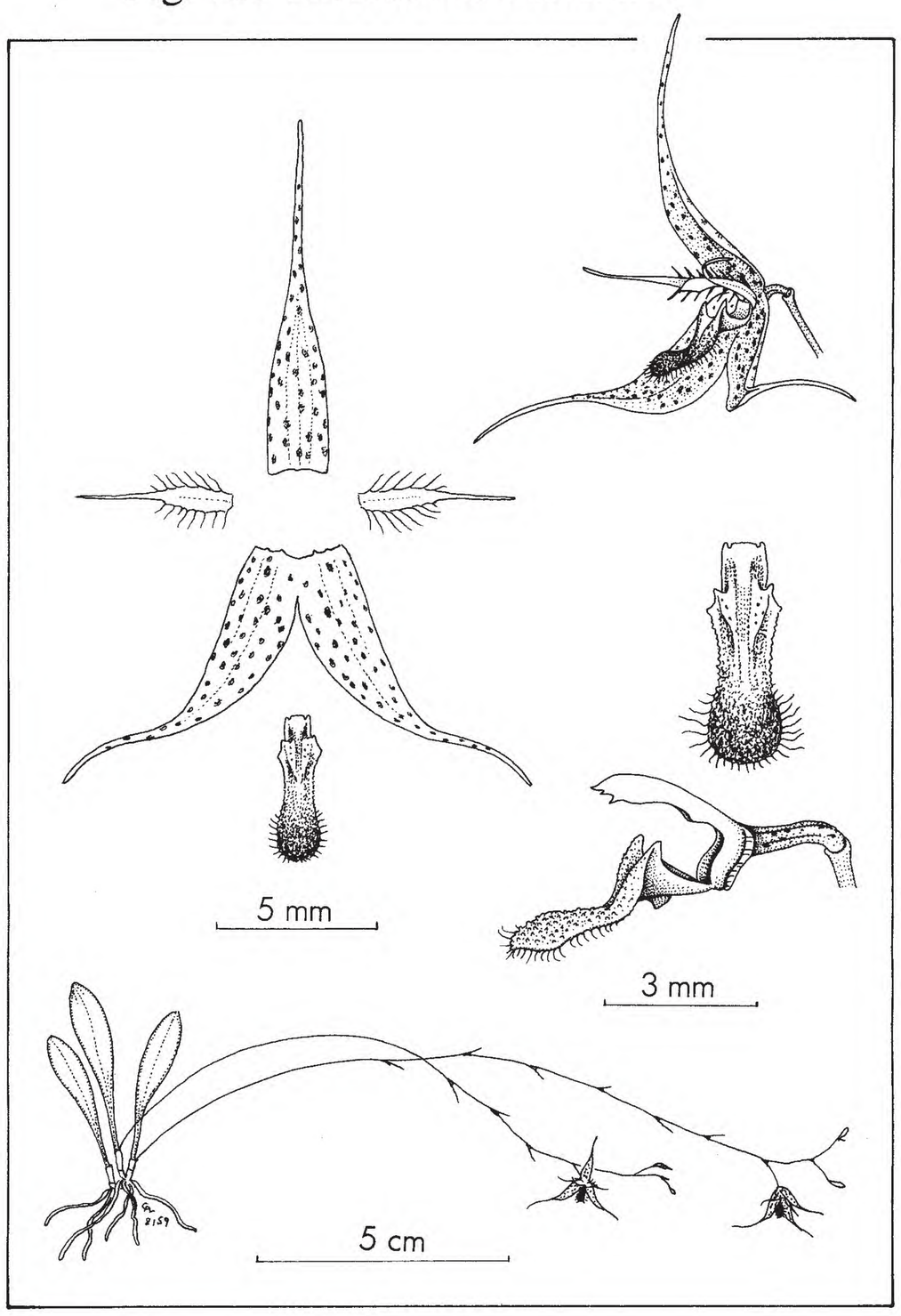


Fig. 74. Muscarella macroblepharis

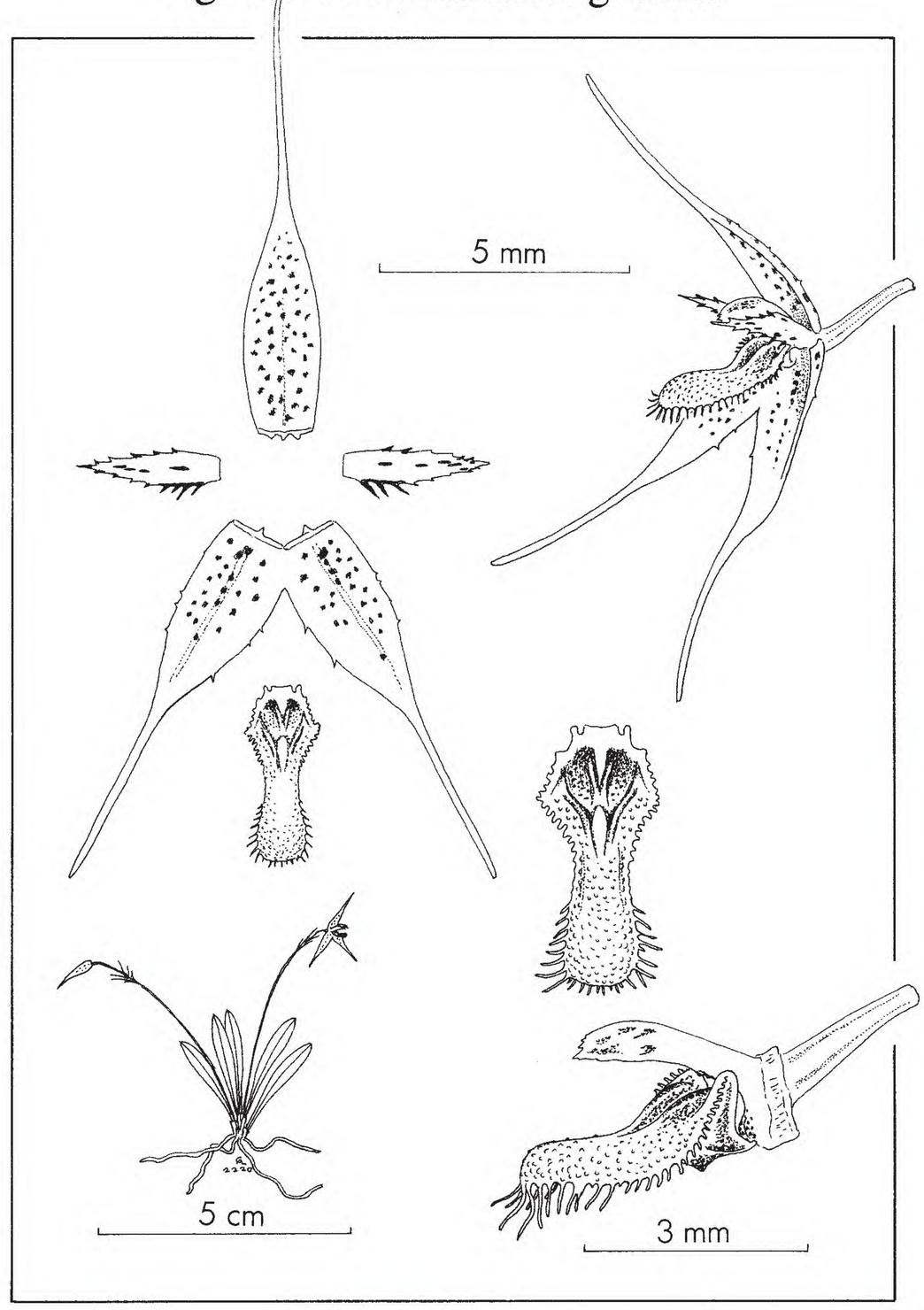


Fig. 75. Muscarella marginata

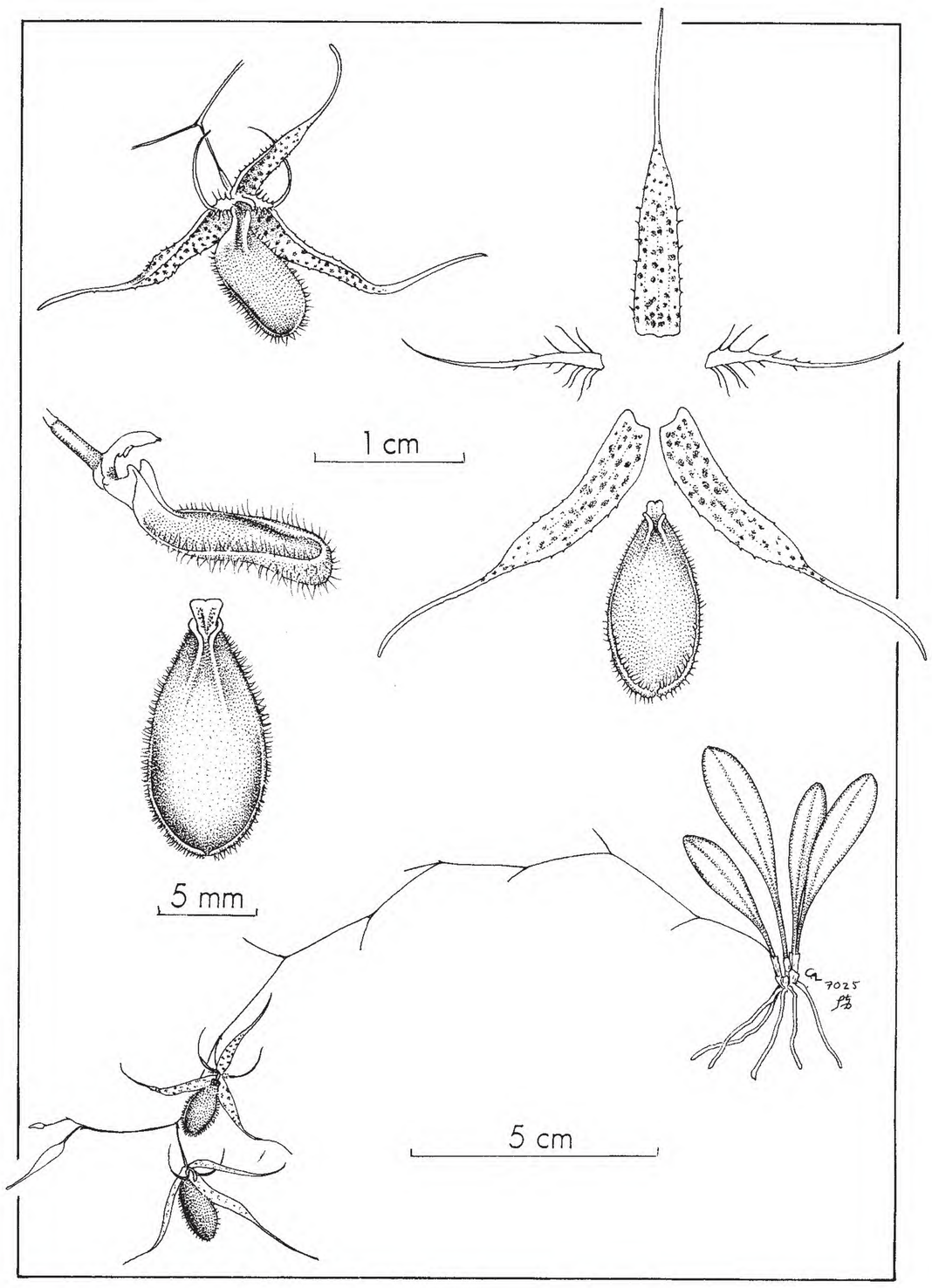


Fig. 76. Muscarella megalops

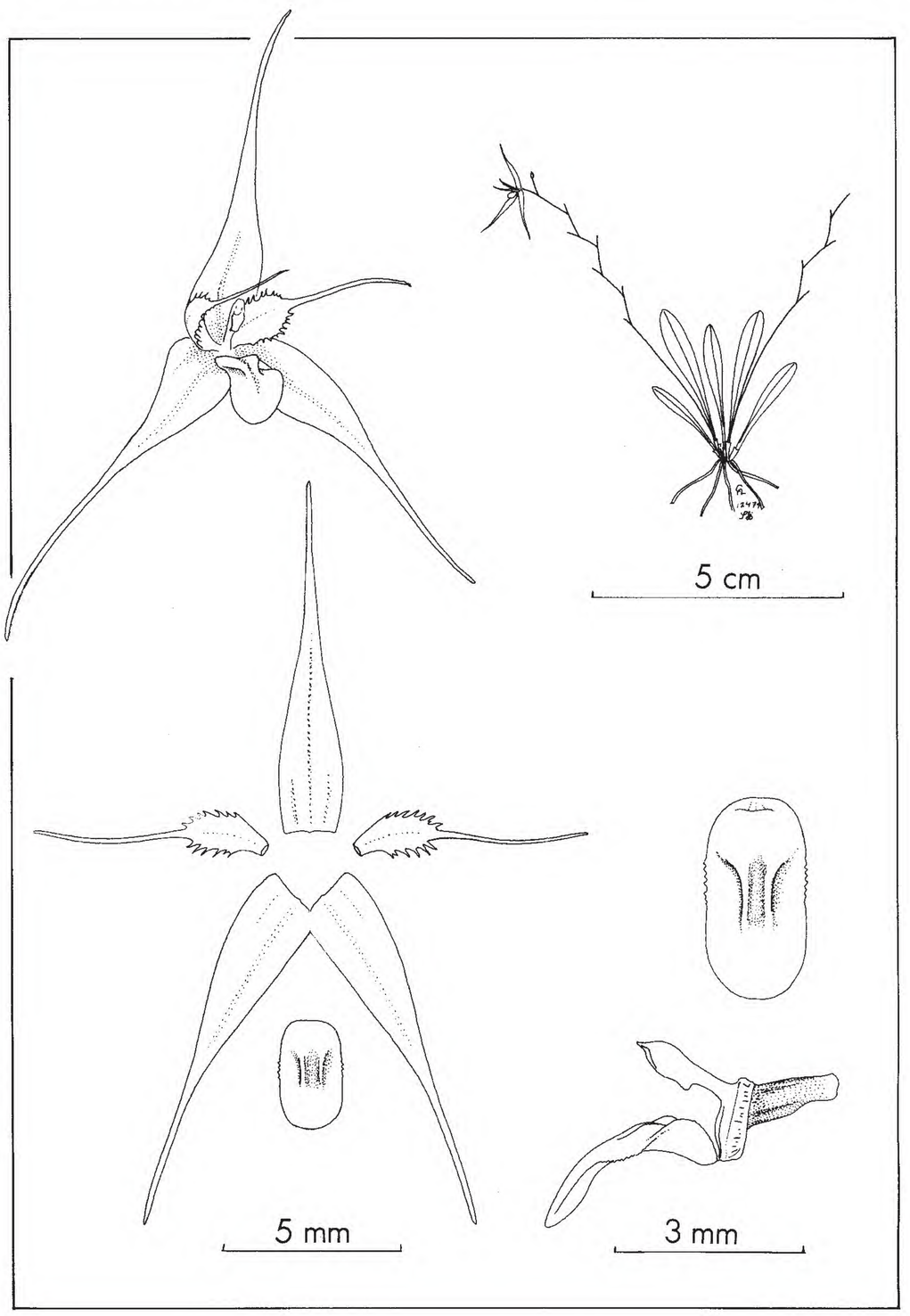


Fig. 77. Muscarella oblonga

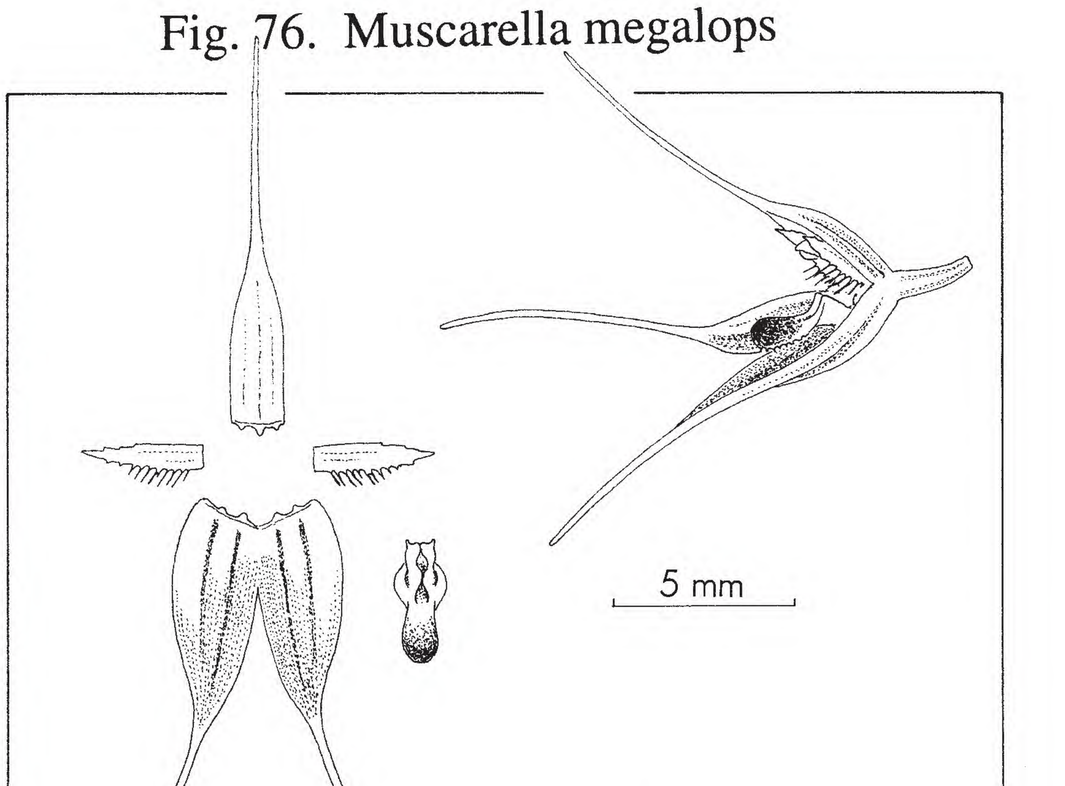


Fig. 78. Muscarella perangusta

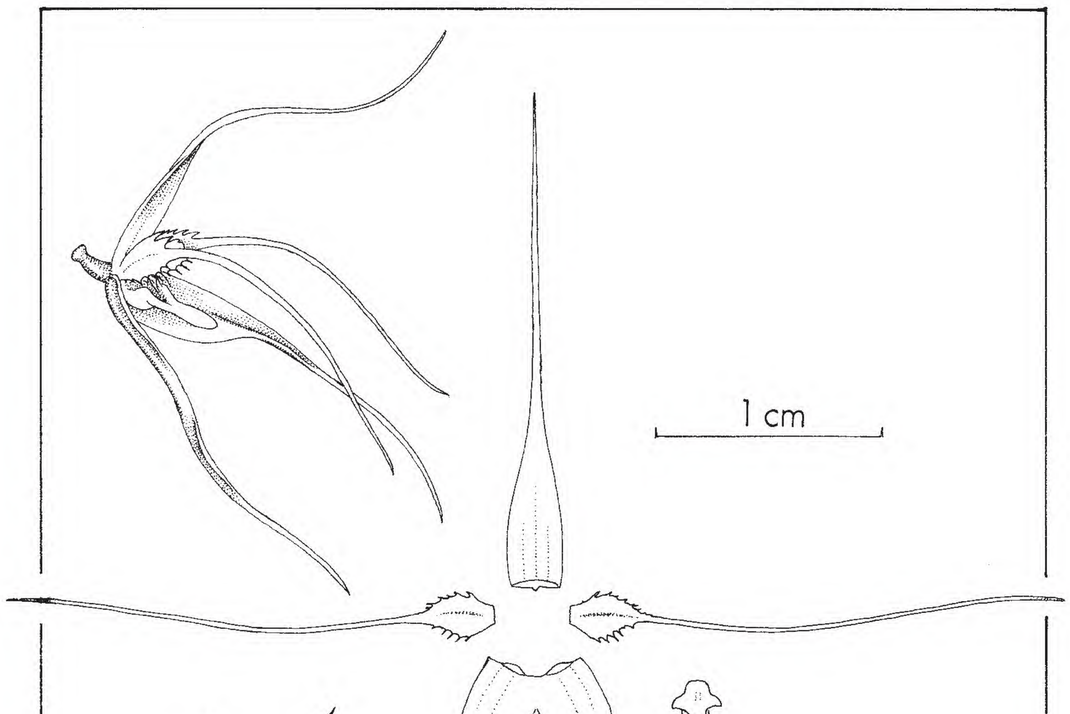


Fig. 79. Muscarella quinqueseta

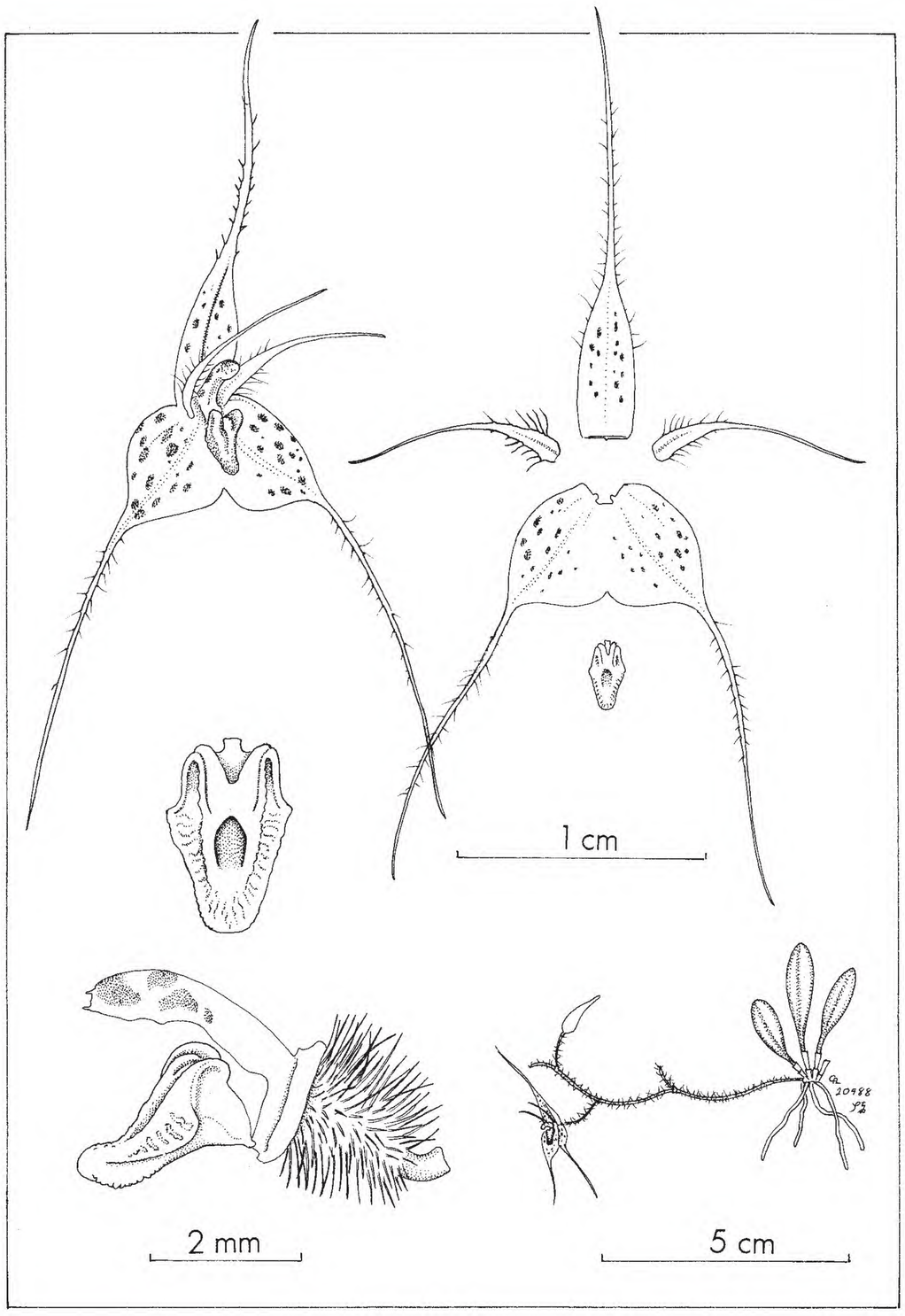


Fig. 80. Muscarella rojohnii

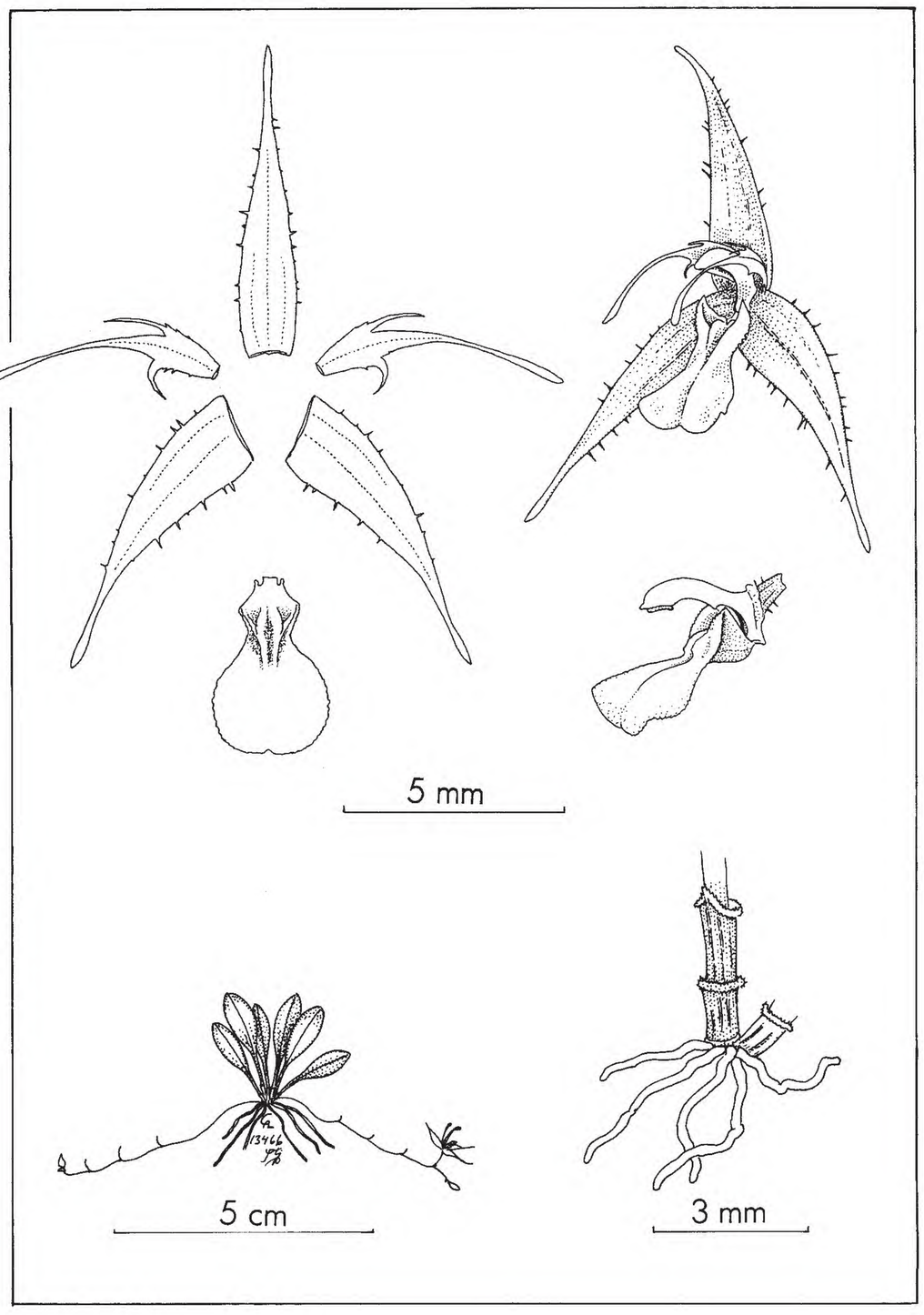


Fig. 81. Muscarella samacensis

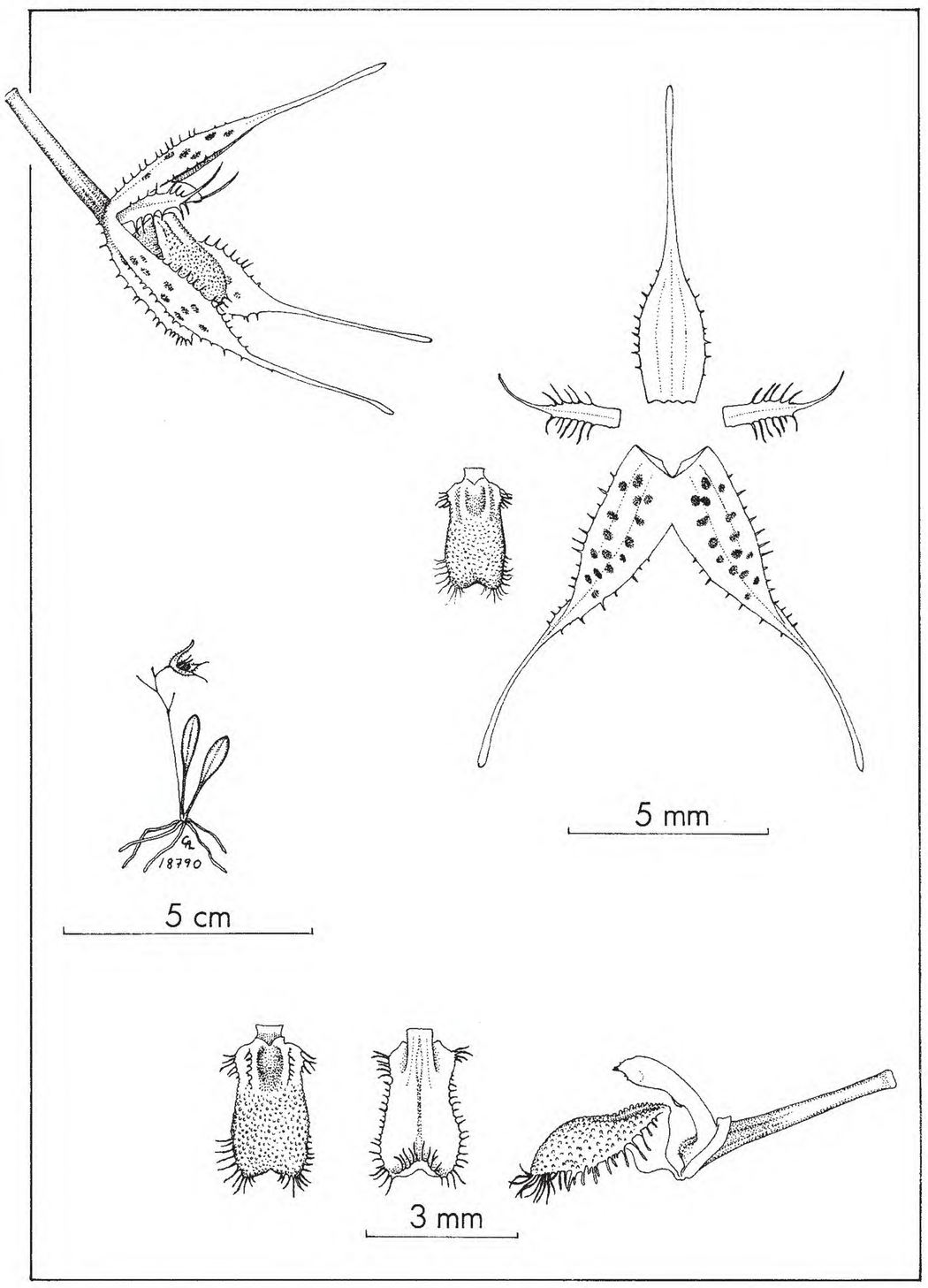


Fig. 82. Muscarella schudelii

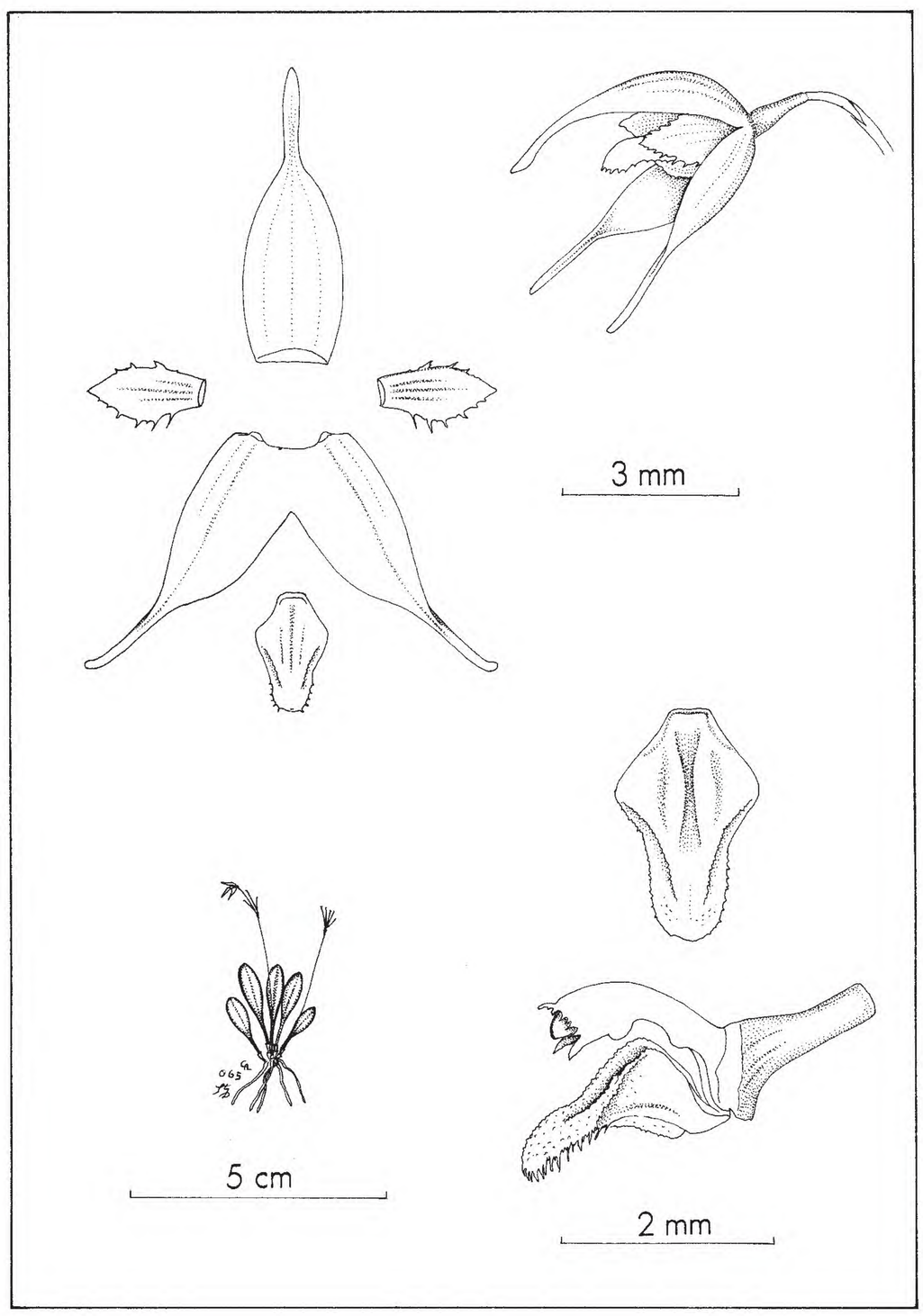


Fig. 83. Muscarella semperflorens

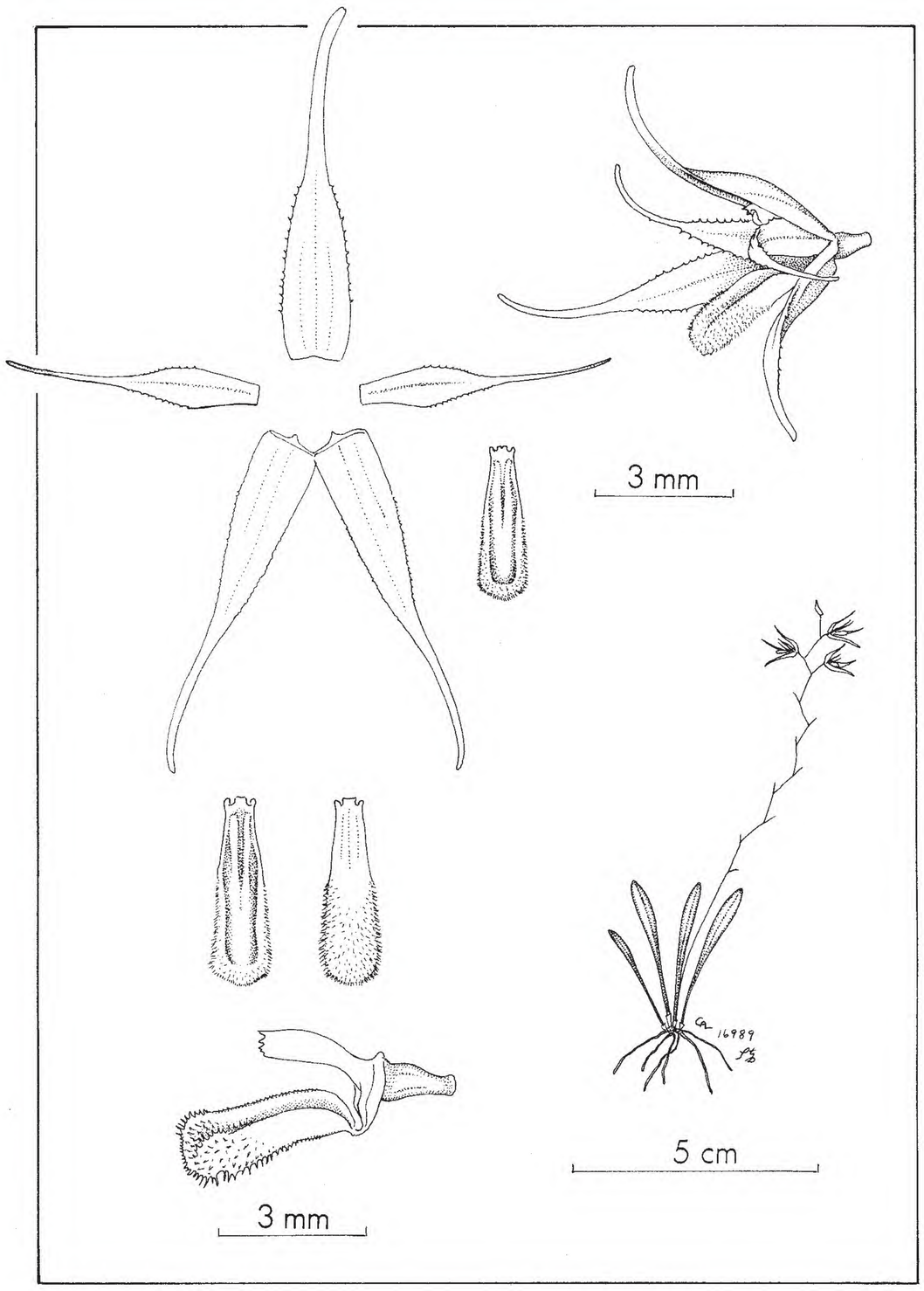


Fig. 84. Muscarella sibatensis

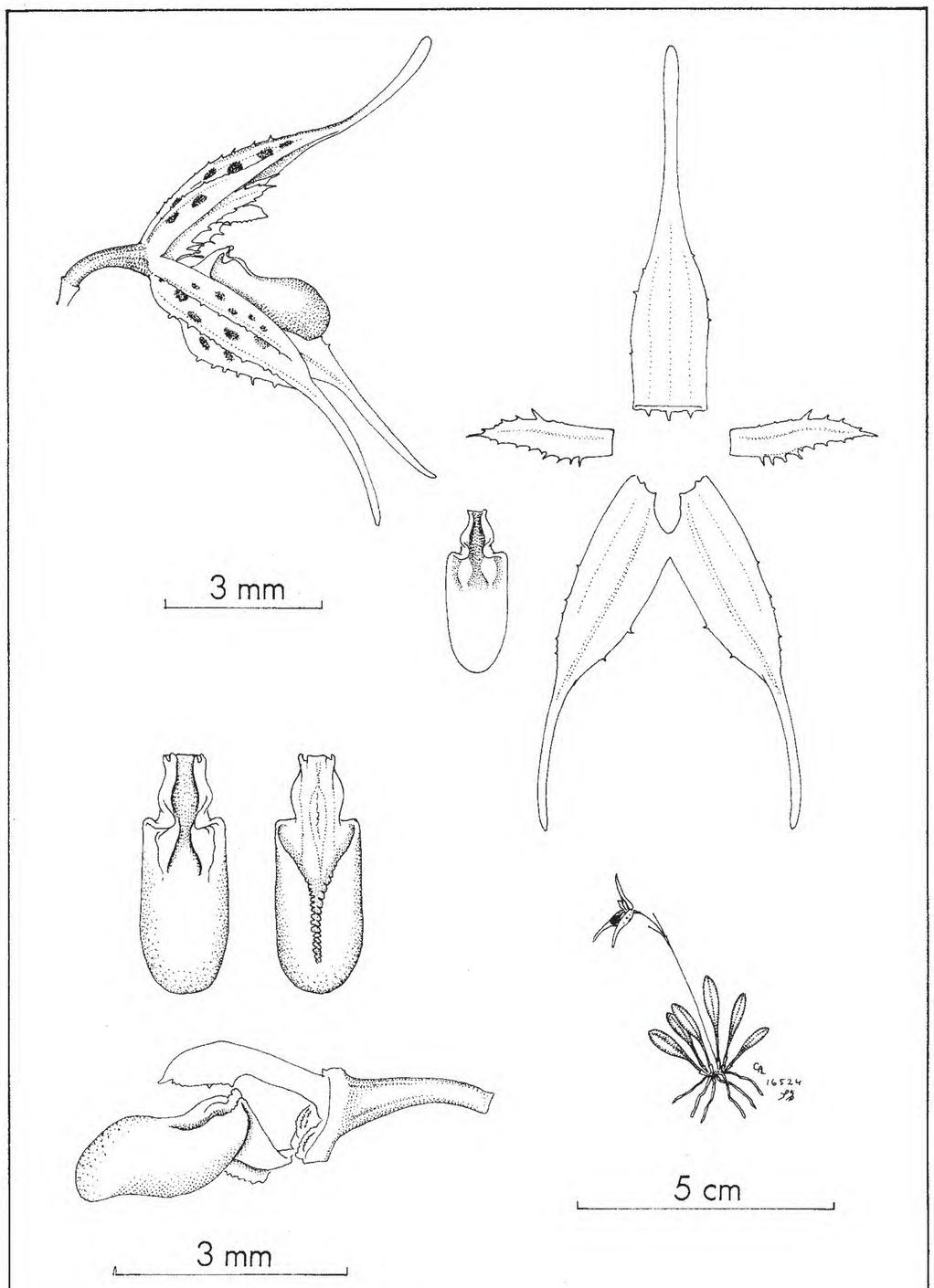


Fig. 85a. Muscarella strumosa
Costa Rica

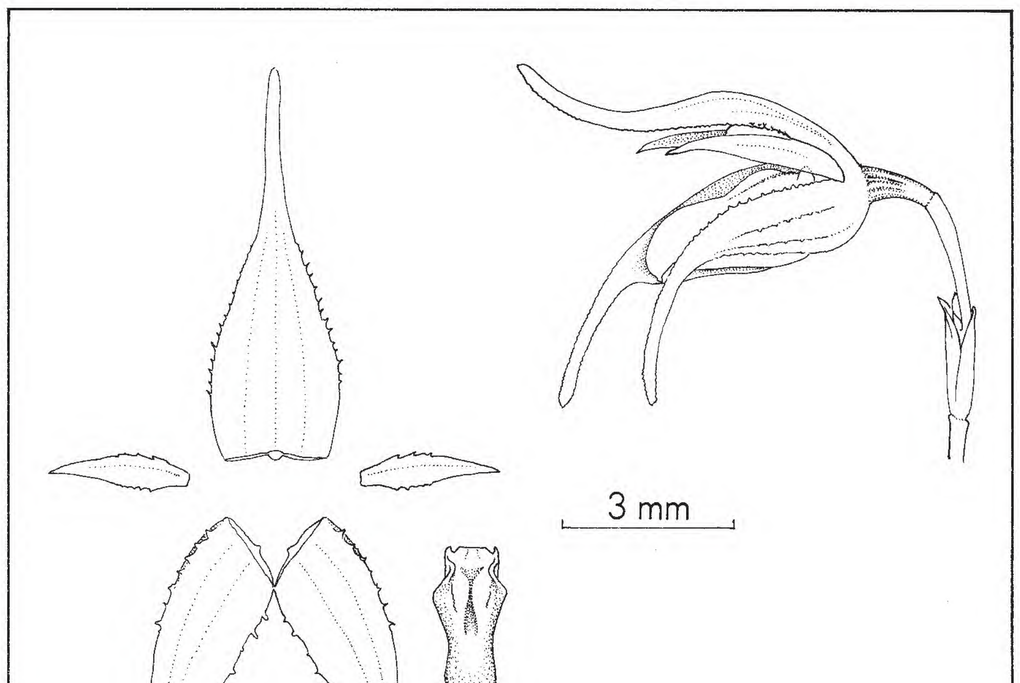


Fig. 85b. Muscarella strumosa
Guatemala

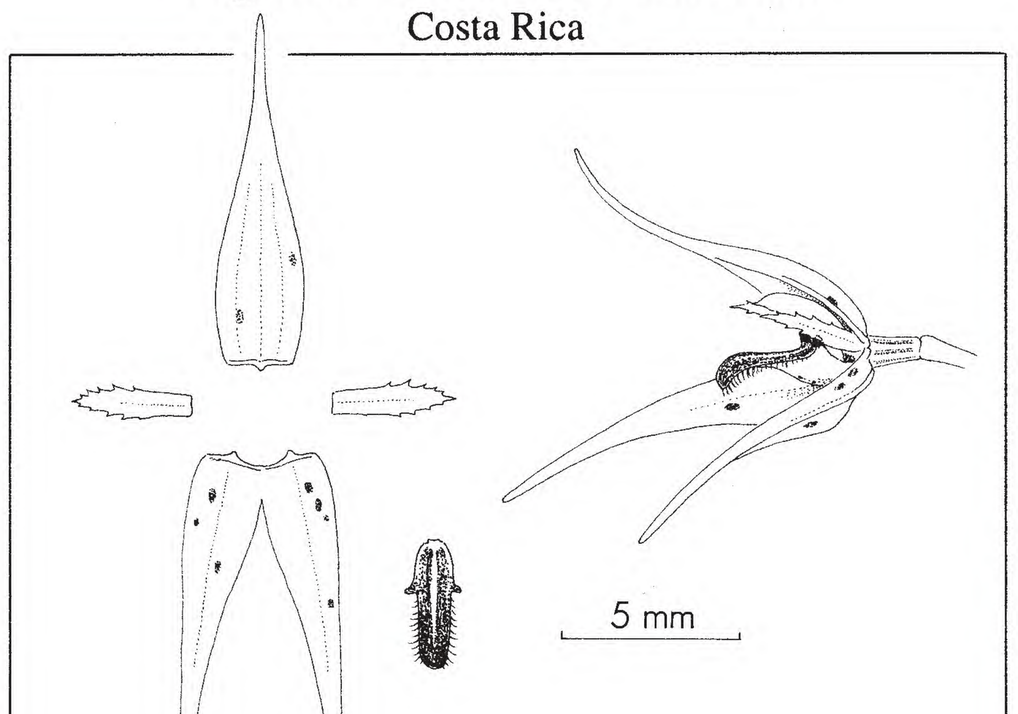


Fig. 86a. Muscarella stumpflei

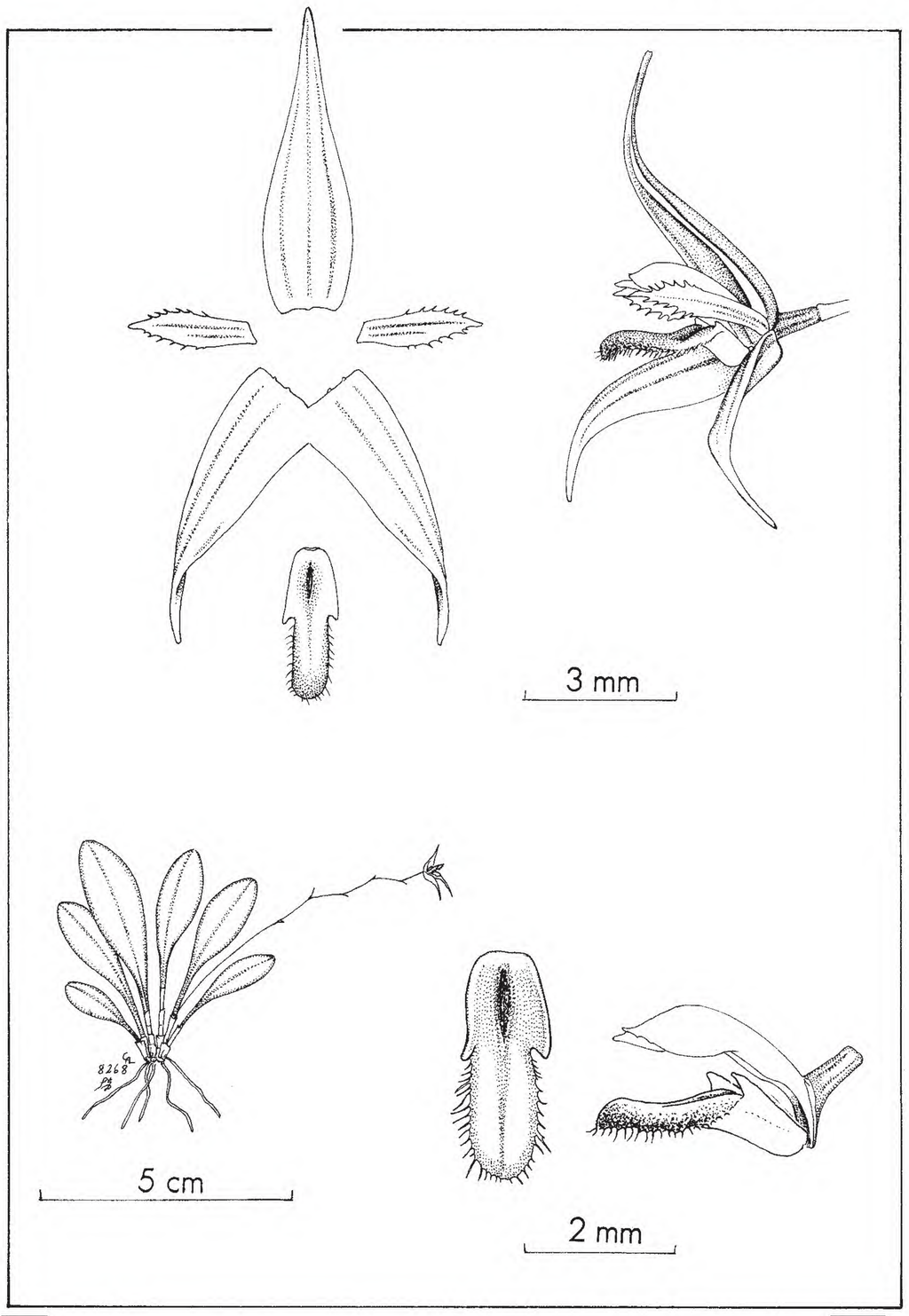


Fig. 86b. Muscarella stumpflei
Pleurothallis simulatrix

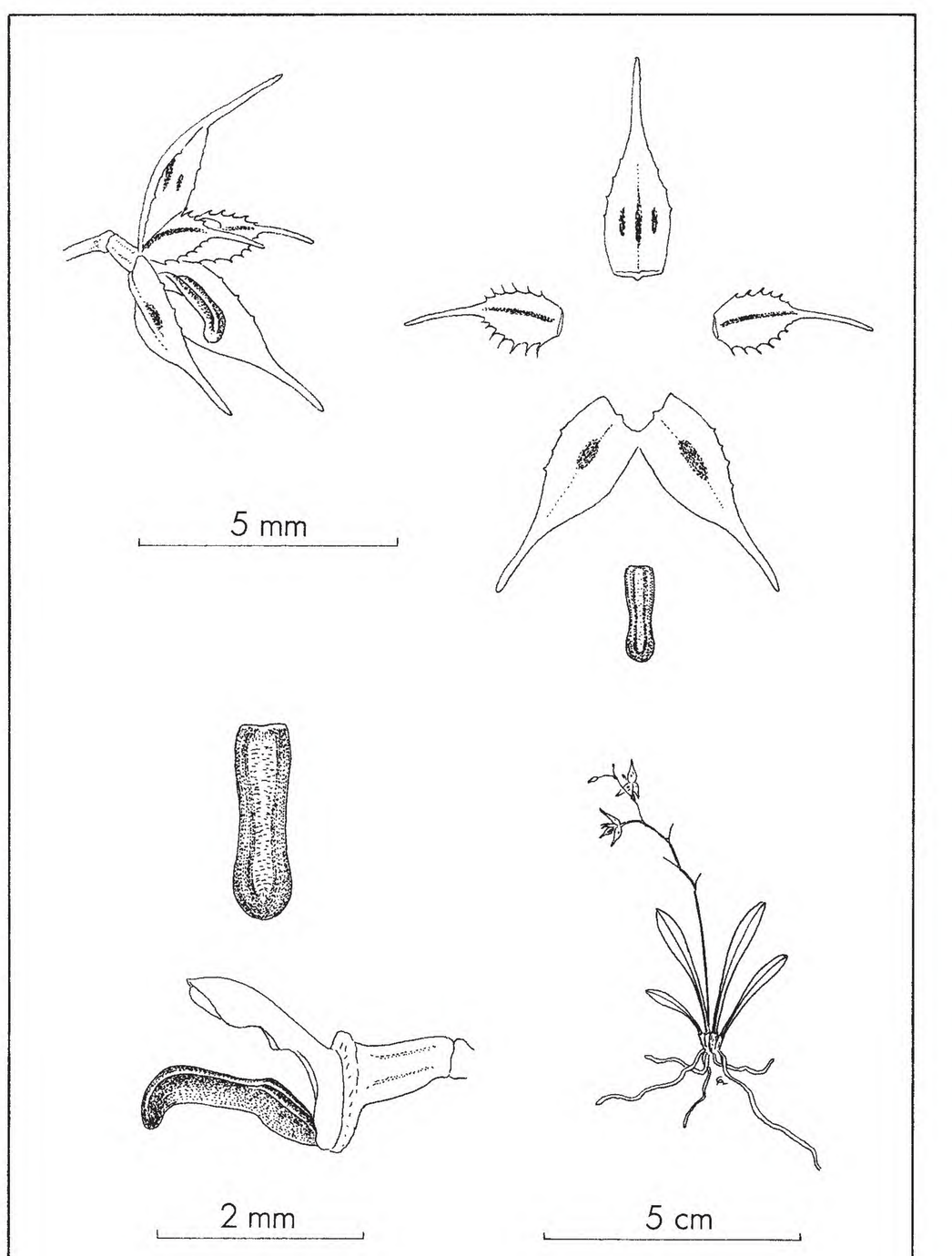


Fig. 87. Muscarella tamboënsis

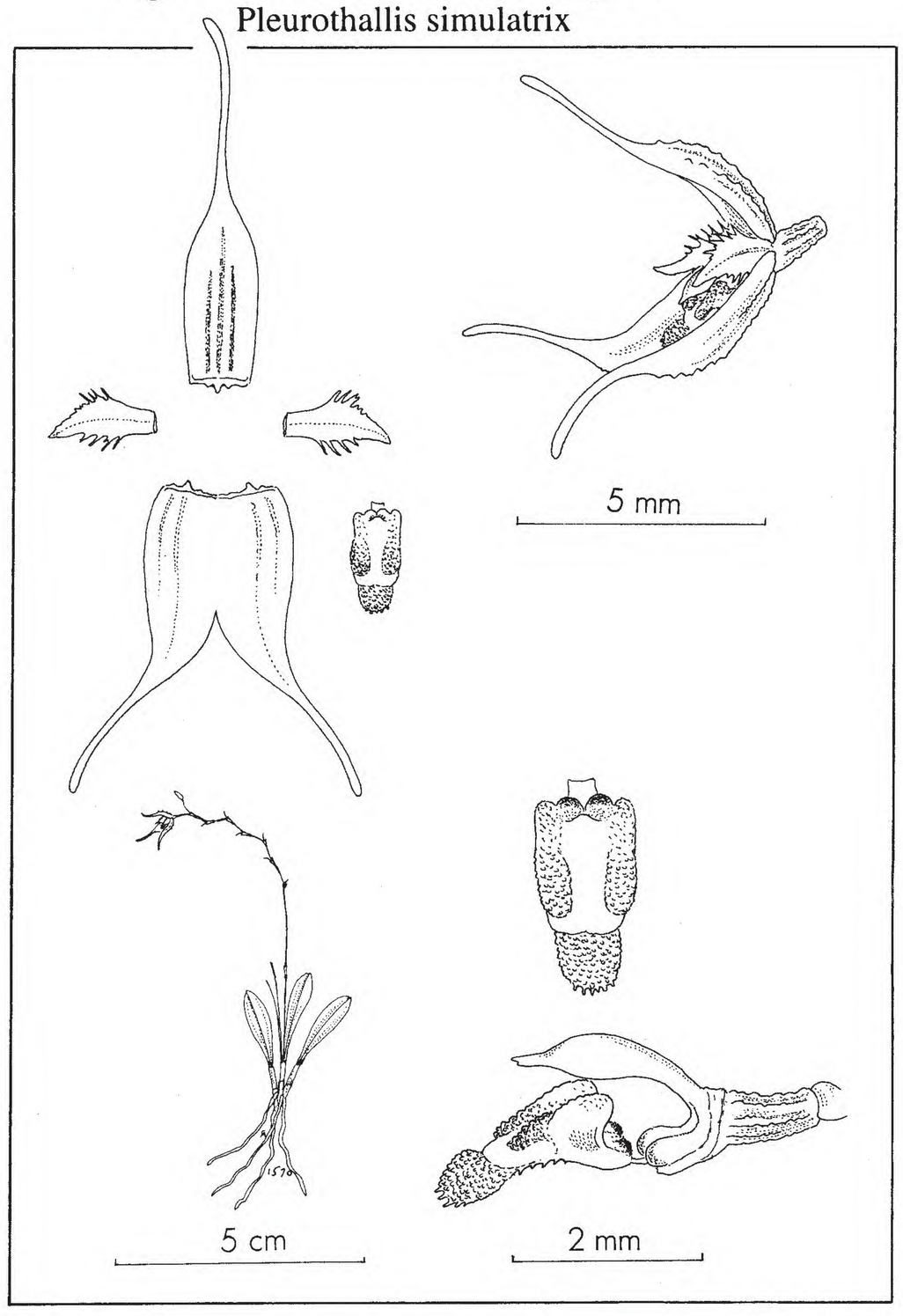


Fig. 88. Muscarella tempestalis

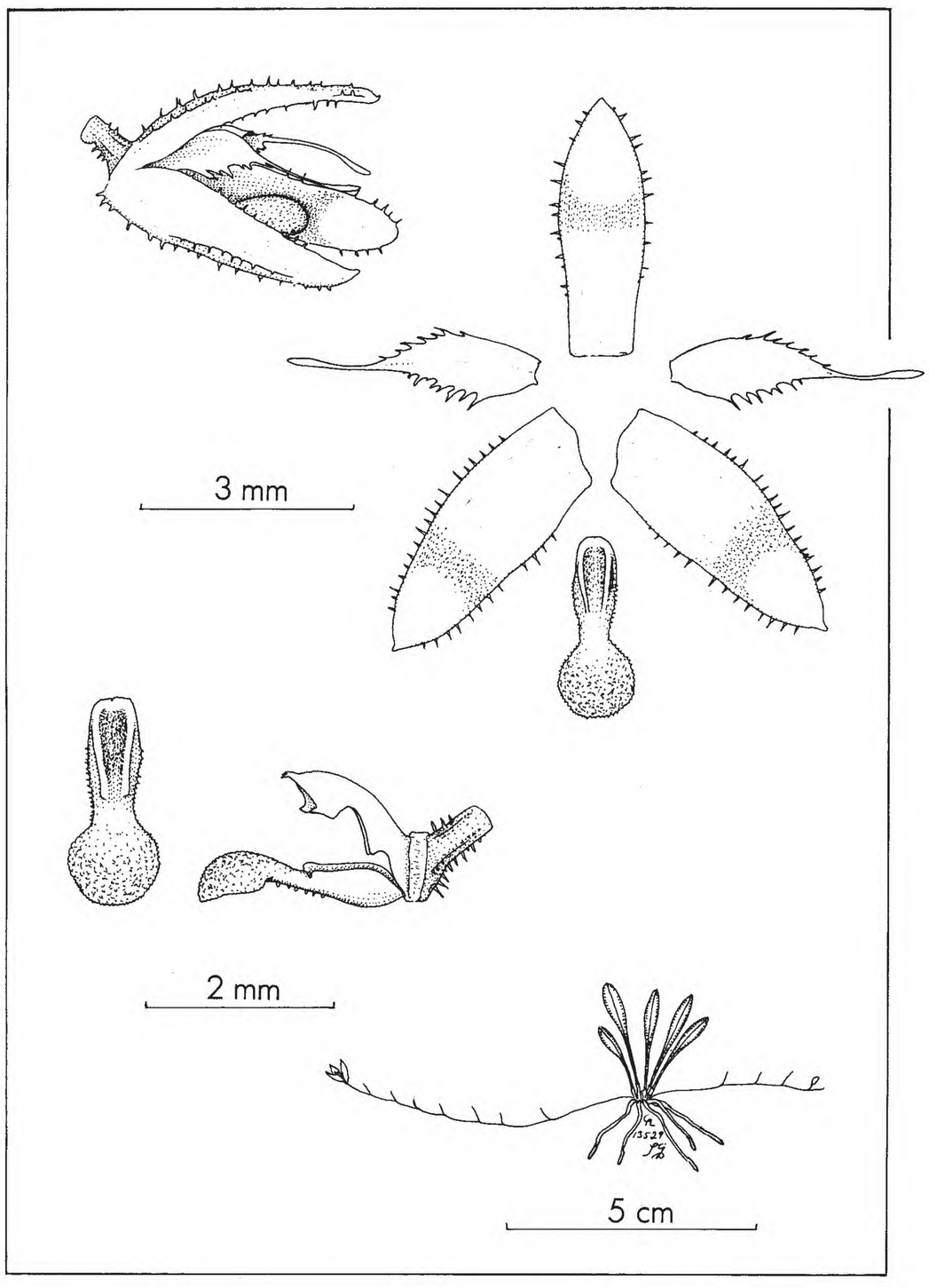


Fig. 89. Muscarella trullifera

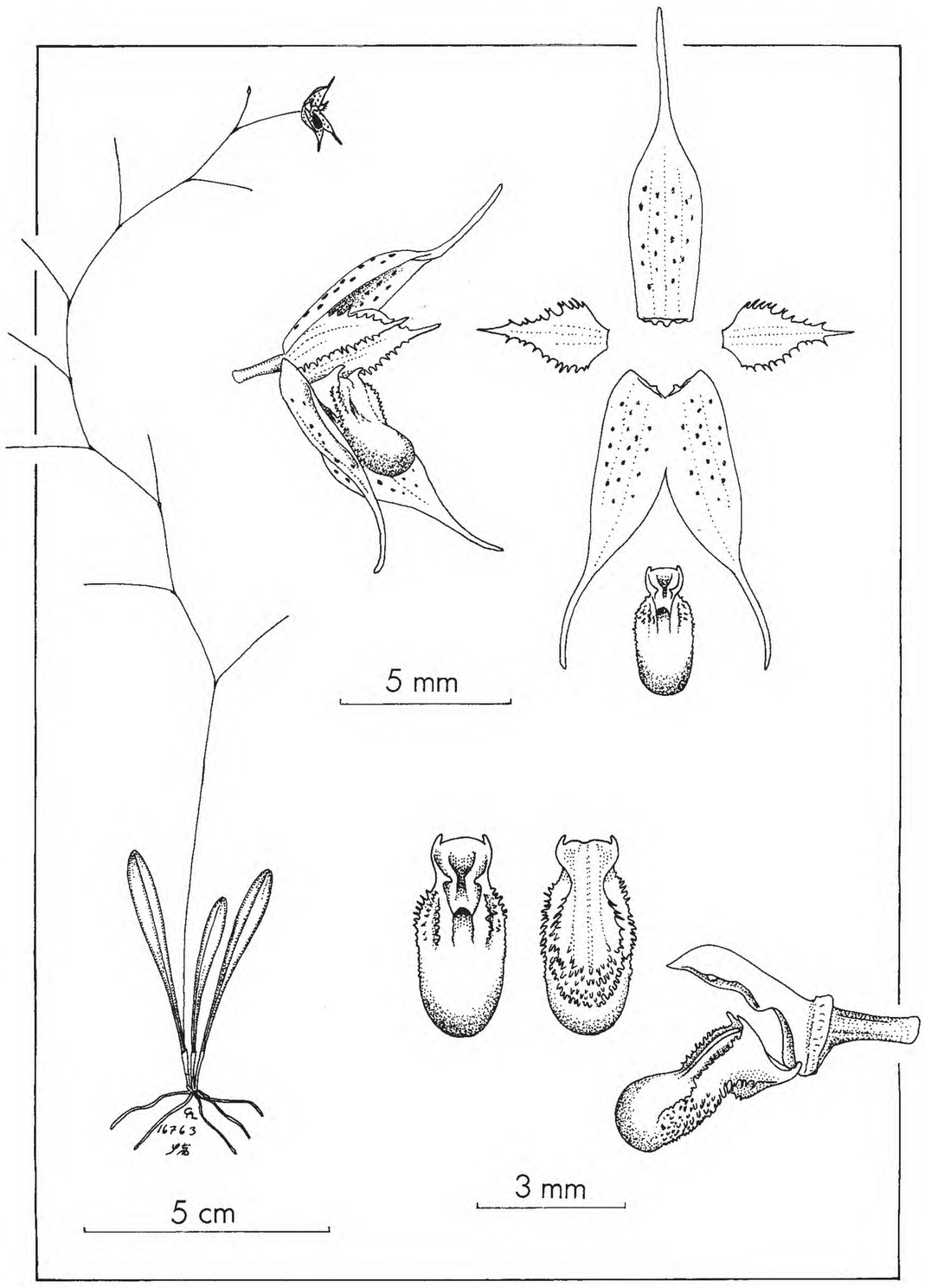


Fig. 90. Muscarella tsubotae

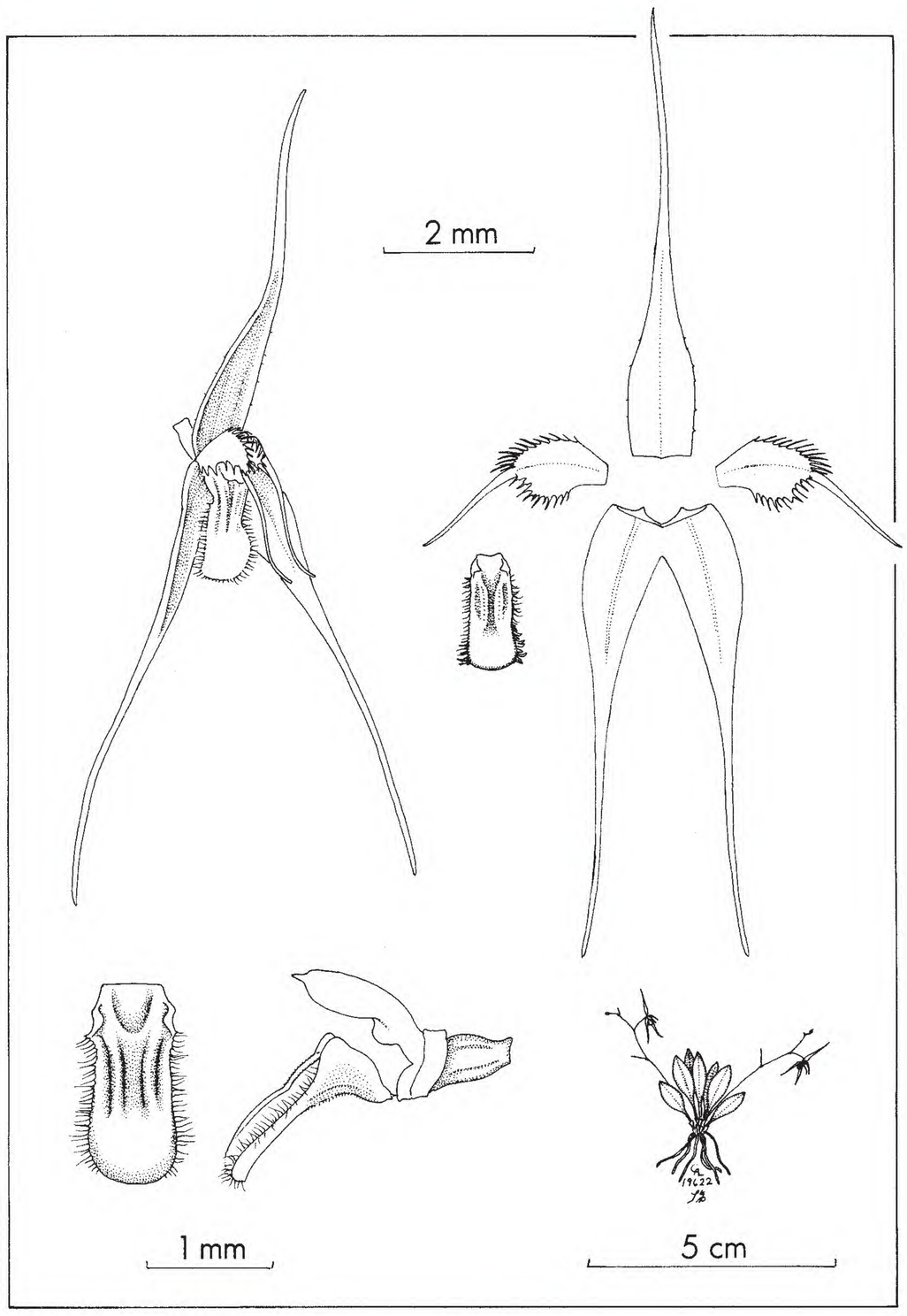


Fig. 91. Muscarella villosilabia

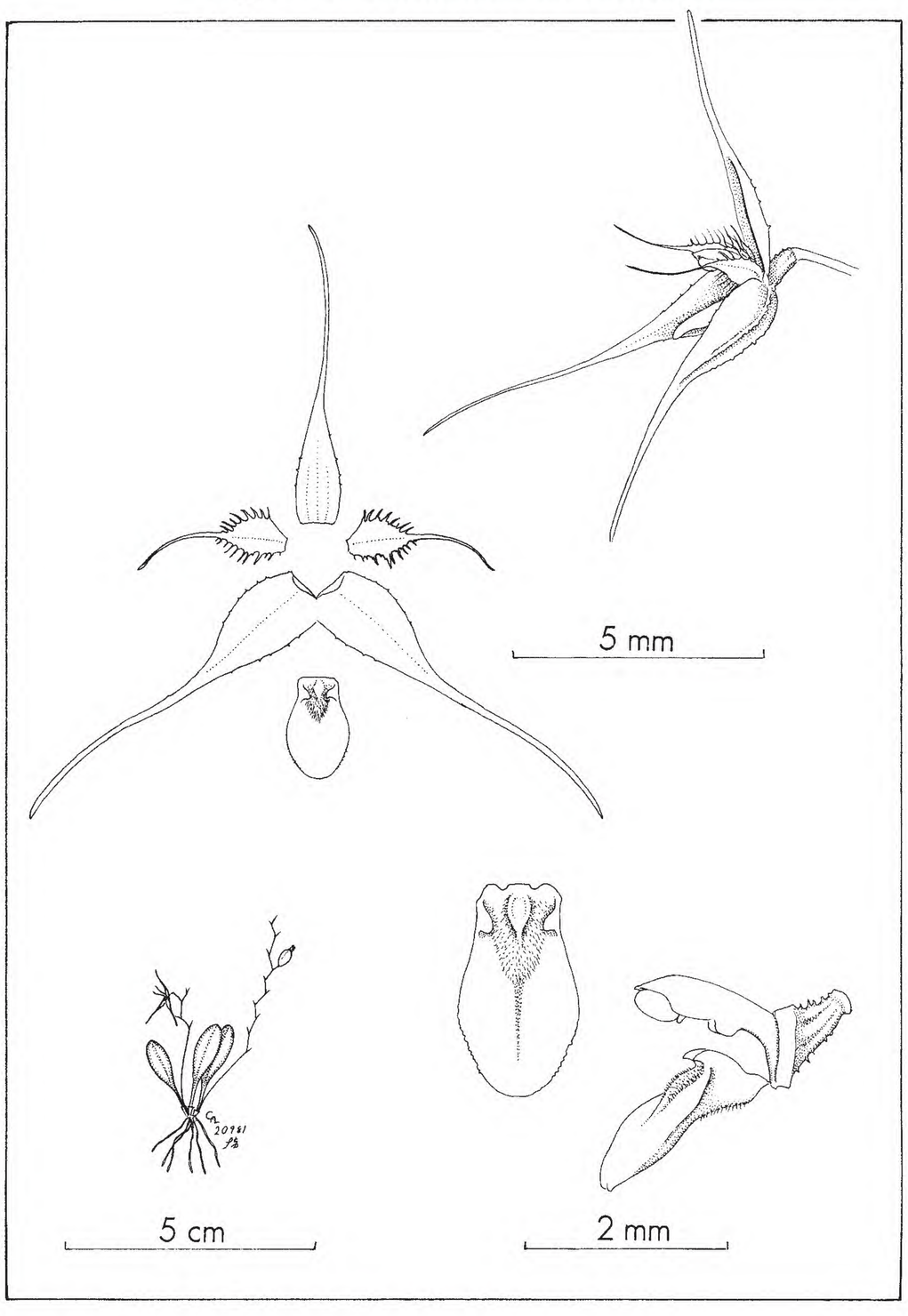


Fig. 92. Muscarella werneri

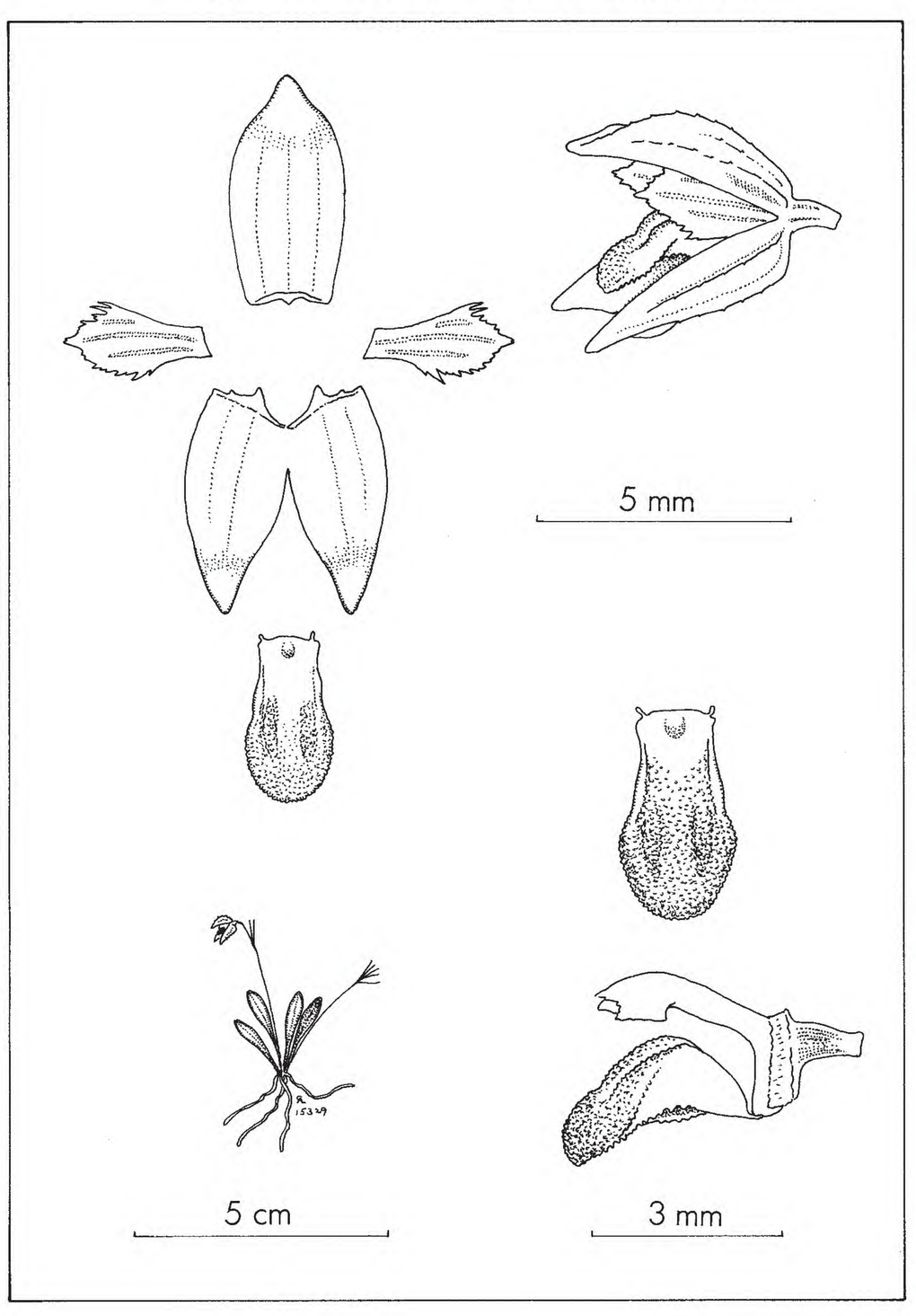


Fig. 93. Muscarella xanthella

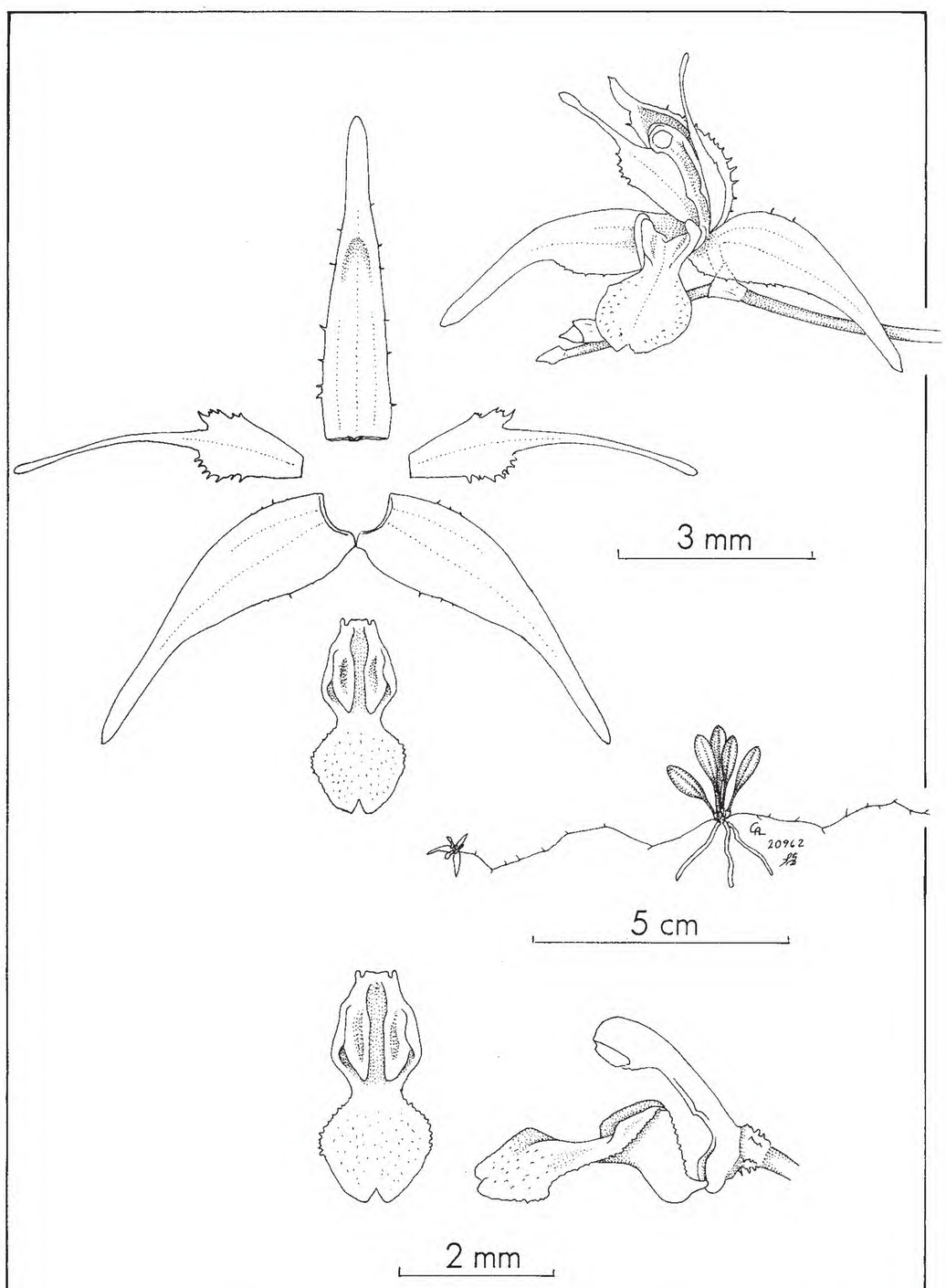


Fig. 94. Muscarella xyloura

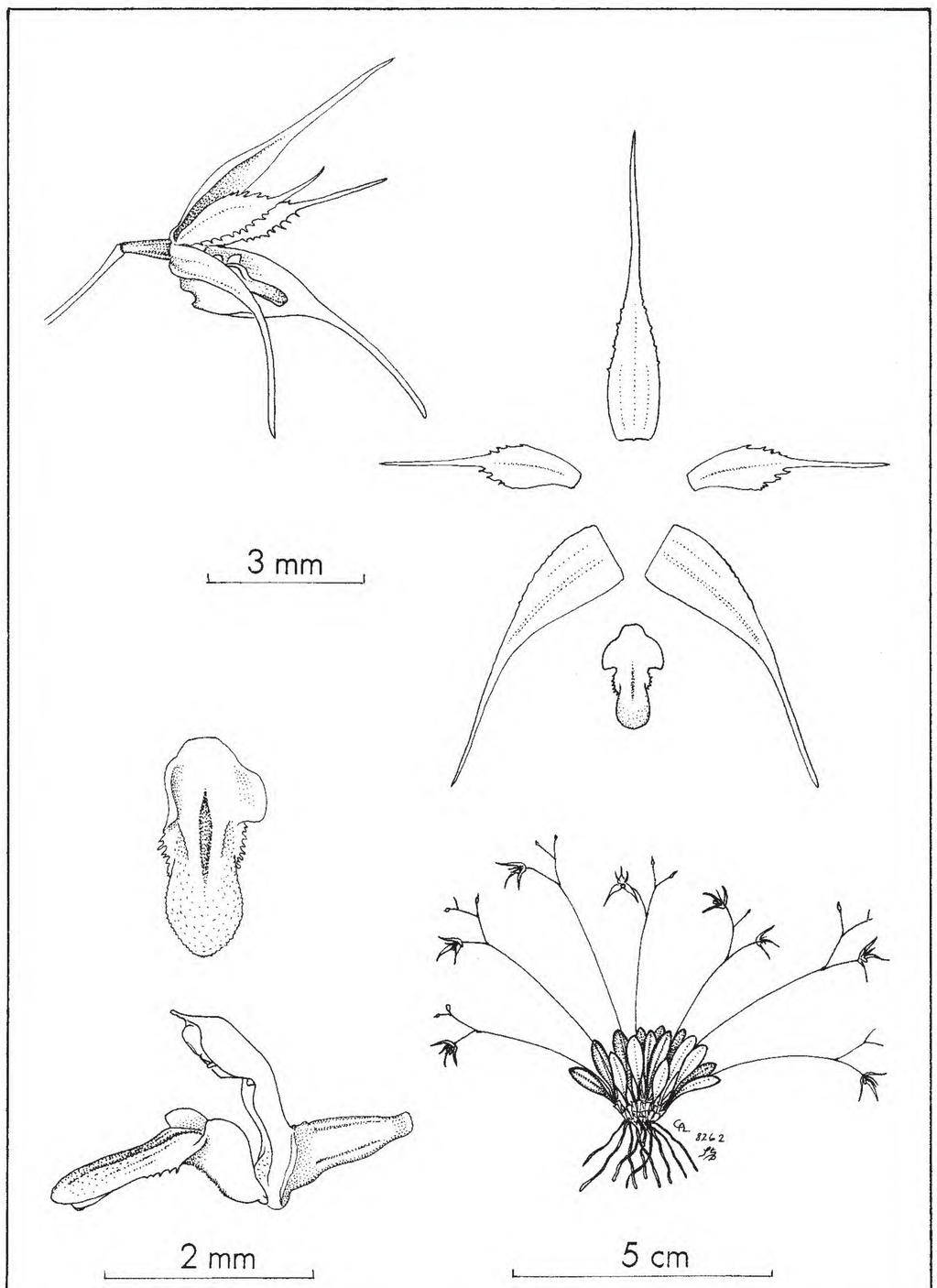


Fig. 95a. Muscarella zephyrina
Pleurothallis setigera

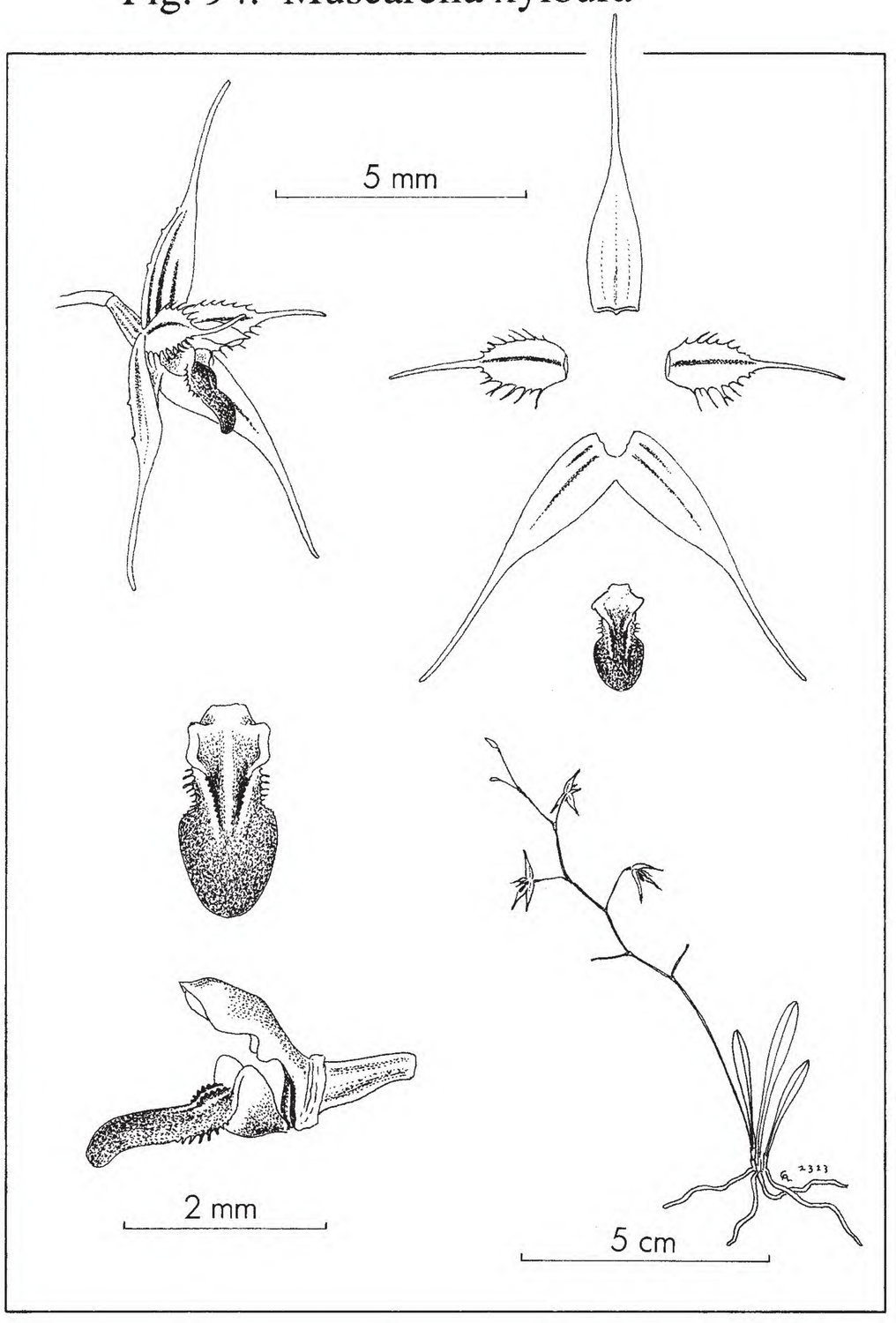


Fig. 95b. Muscarella zephyrina
Pleurothallis lauta

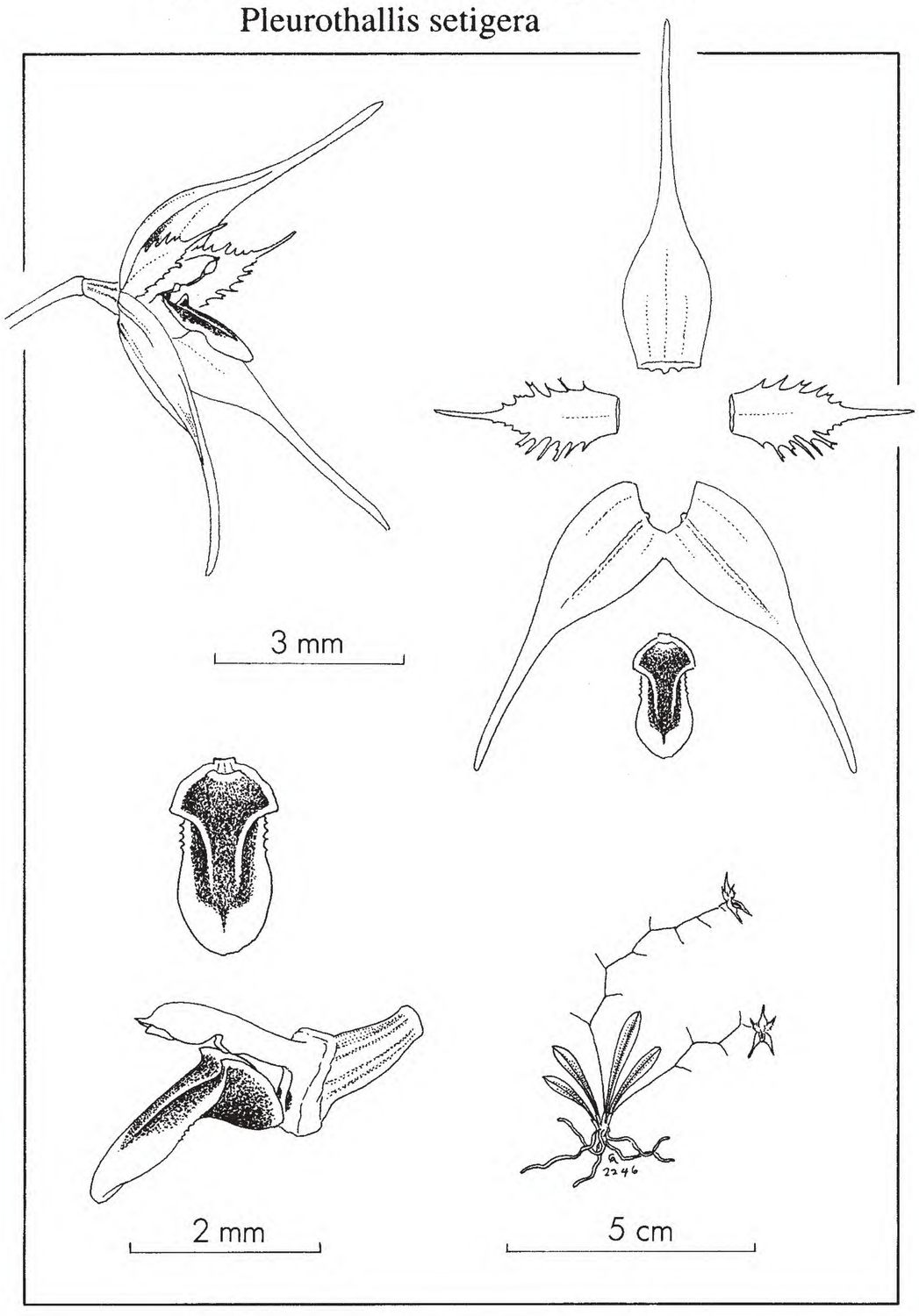


Fig. 95c. Muscarella zephyrina
P. fimbripetala, P. schistopetala

PABSTIELLA

Pabstiella Brieger & Senghas, Die Orchidee 27: 195, 1976.
Type: *Pleurothallis mirabilis* Schltr., Notizbl. Bot. Gart. Berlin-Dahlem 7: 274, 1918.
Ety.: Named for Guido Frederico Pabst (1914-1980), noted authority on the orchids of Brazil.

Syn.: *Pleurothallis* subgen. *Mirabilia* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 47, 1986.
Type: *Pleurothallis mirabilis* Schltr. [=*Pabstiella mirabilis* (Schltr.) Brieger & Senghas.

This genus, widely distributed in the Andes and Brazil, is variable both vegetatively and florally. Only three species north of Brazil with abbreviated ramicals are treated here. The dorsal sepal is free, but the laterals are variously connate, sometimes into a spur. The species with the deepest spur, described by Schlechter as *Pleurothallis mirabilis* [=*Pabstiella mirabilis* (Schltr.) Brieger & Senghas], is the type of the genus *Pabstiella*, which at that time was thought to be unispecific.

Pabstiella parvifolia (Lindl.) Luer, comb. nov.
Bas.: *Pleurothallis parvifolia* Lindl., Comp. Bot. Mag. 2: 355, 1836.
Ety.: From the Latin *parvifolius*, "small-leaved," in reference to the foliage.

Syn.: *Lepanthes cryptophyta* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 65, 1882.
Ety.: From the Greek *cryptophytos*, "hidden leaves," referring to the small foliage.

Syn.: *Humboldtia parvifolia* (Lindl.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.

Syn.: *Pleurothallis subumbellata* Cogn., Bull. Soc. Bot. Belg. 43: 313, 1906 (1907).
Ety.: From the Latin *subumbellatus*, "nearly umbelliform," referring to the inflorescence.

Syn.: *Pleurothallis succedanea* Hoehne & Schltr., Archiv. Bot. Estado São Paulo 1(3): 224, 1926.
Ety.: From the Latin *succedaneus*, "substituted," referring to the successive inflorescence.
Syn.: *Specklinia parvifolia* (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant small, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 2-5 mm long, enclosed by 2 loose, tubular sheaths. **Leaf** erect, coriaceous, subcircular to broadly elliptical-obovate, obtuse to rounded at the apex, 8-15 mm long including a petiole 1-3 mm long, 4-6 mm wide, cuneate below into the base. **Inflorescence** a successively flowered fascicle, borne by a filiform peduncle 2-4 cm long, from near the apex of a ramicaul; floral bracts 3-4 mm long; pedicels 4-7 mm long; ovary 1-1.5 mm long; **sepals** thickly translucent light brown with thin red veins, the dorsal sepal subcarinate, elliptical-oblong, 4.75-6 mm long, 2.5-3 mm wide, 3-veined, the lateral sepals microscopically ciliate, connate into a bicarinate, ovate, obtuse, minutely bifid lamina, 4.5-5.5 mm long, 4-4.5 mm wide, 4-veined; **petals** light yellow, translucent, obovate, broadly obtuse or rounded at the apex, 3-4 mm long, 1.75-2.5 mm wide, 3-veined; **lip** purple, arcuate, elliptical with erect, rounded sides, obtuse to rounded at the apex, 3.5-4.5 mm long, 2-3.5 mm wide expanded, minutely verrucose above the middle, the base truncate, hinged to the column-foot; **column** green, semiterete, 2-3 mm long, denticulate at the apex, the anther, rostellum and stigma ventral, the foot elongated, 1.5 mm long.

BRAZIL: **Rio de Janeiro**: "forests of Macahé and in all the interior of Brazil," *Descourtilz t. 24* (Holotype only a poor drawing: K, Isotype: AMES); sine loc., *A. Glaziou 113bis* (holotype of *P. subumbellata*: BR). **São Paulo**: Alto da Serra, Estação Biologica, Dec. 1920, *A. Gehrt s.n.* (holotype of *P. succedanea* destroyed at B; lectotype here designated: SP-4599); Alto da Serra, 15 Nov. 1921, *A. Gehrt s.n.* (AMES, SP-4599), C. Luer illustr. 19093. Sine loc,, *Toscano 659* (MO), C. Luer illustr. 16953.
ECUADOR: **Napo**: Río Jatunyacu, above Shandia, alt. 650 m, 12 Mar. 1991, *A. Hirtz & S. Ortega 5361* (MO). **Zamora-Chinchipe**: Cordillera del Condor, southeast of Paquisha, Mayaicu, alt. 1070 m, 20 May 1988, *C. Luer, A. Hirtz, W. Flores, A. Andreetta & W. Teague 13494* (MO).
COLOMBIA: sine loc., cultivated by the Robledos at La Ceja, 13 Nov. 1977, *C. Luer 2187* (SEL).
VENEZUELA: **Bolívar**: Río Paragua, Salto Mahigia, 300 m, illustr. Oct. 1965, *G.C.K. Dunsterville 954.*

This little species occurs in Amazonian Brazil, Colombia, Ecuador, Peru and Venezuela. It is characterized by the small, subcircular to broadly elliptical leaves borne by very short ramicauls and far surpassed by a filiform peduncle that bears a congested, umbelliform raceme of successive flowers. The lateral sepals are obtuse and connate to an elongated column-foot to form a mentum. The petals are large, fleshy, three-veined, and broadly rounded at the apex, an exception in the genus. The lip is arcuate, broadly elliptical, obtuse, and minutely verrucose within.

Illustration: Fig. 97, herein, C. Luer illustr. 13494.

Pabstiella tripterantha (Rchb.f.) Luer, comb. nov.

Bas.: *Pleurothallis tripterantha* Rchb.f., Bonplandia 2: 24, 1854.
Ety.: From the Greek *tripteranthos*, "three-winged flower," referring to the tall-carinate ovaries and sepals.

Syn.: *Pleurothallis tripterygia*, Rchb.f., Bonplandia 2: 24, 1854.
Ety.: From the Greek *triptergion*, "three-finned," referring to the finlike carinae of the sepals and ovary.

Syn.: *Pleurothallis procumbens* Lindl., Folia Orch. *Pleurothallis* 35, 1859.
Ety.: From the Latin *procumbens*, "leaning forward or downward," referring to the scandent habit.

Syn.: *Lepanthes tricarinata* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 43, 1882, not *P. tricarinata* Poepp. & Endl., 1836.
Ety.: From the Latin *tricarinatus*, "tricarinate," referring to the ovary and sepals.

Syn.: *Humboldtia procumbens* (Lindl.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.
Syn.: *Humboldtia tripterantha* (Rchb.f.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.
Syn.: *Humboldtia tripterygia* (Rchb.f.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.

Syn.: *Pleurothallis trialata* Cogn., Fl. Bras. 3(4): 500, 1896, replaced name for *Lepanthes tricarinata* Barb.Rodr.
Ety.: From the Latin *trialatus*, " three-winged," referring to the flowers and ovaries.

Syn.: *Masdevallia tricarinata* Lehm. & Kraenzl., Bot. Jahrb. Syst. 26: 456, 1899, not *P. tricarinata* Poepp. & Endl., 1836.

Syn.: *Pleurothallis hamata* Rolfe, Orch. Rev. 24: 187, 1916, *nomen nudum*; ex Ames, Sched. Orch. 3: 8, 1923.
Ety.: From the Latin *hamatus*, "hooked at the tip," in allusion to recurving of tips of some sepals.

Syn.: *Pleurothallis medellinensis* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 236, 1920.
Ety.: Named for the city of Medellín, Colombia, near where the species was collected.

Syn.: *Masdevallia carpophora* Kraenzl., Repert. Spec. Nov. Regni Veg. 17: 427, 1921.
Ety.: From the Greek *carpophoros*, "fruit-bearing," referring to the cleistogamous flowers.

Syn.: *Masdevallia aperta* Kraenzl., Repert. Spec. Nov. Regni Veg. 17: 430, 1921.
Ety.: From the Latin *apertus*, "open," referring to the open flower as compared to those closed.

Syn.: *Pleurothallis hunteriana* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 17: 20, 1922.
Ety.: Named for a Mr. Hunter, collector of this species.

Syn.: *Pleurothallis aperta* (Kraenzl.) Ames, Sched. Orch. 7: 17, 1924.
Syn.: *Scaphosepalum carpophorum* (Kraenzl.) Garay, Bot. Mus. Leafl. 21: 251, 1967.
Syn.: *Anthereon tripteranthus* (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 252, 2001.
Syn.: *Specklinia tripterantha* (Rchb.f.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Plant small to large, epiphytic, shortly repent to caespitose; roots slender. Ramicauls slender or stout, 0.5-3 cm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical to narrowly obovate, subacute to acute, 5-18 cm long, 1-2 cm wide, the base narrowly cuneate into an ill-defined petiole 1-5 cm long. **Inflorescence** a lax, simultaneously few- to many-flowered raceme, 3-44 cm long, including the peduncle 2-10 cm long, produced laterally from the ramicaul; flowers often cleistogamous; floral bracts 3-5 mm long; pedicels 4-8 mm long; ovary 2-4 mm long, thickly tall-winged; **sepals** fleshy, tall-carinate, green or yellow-green, variously mottled, spotted or dotted with purple, brown, or red, glabrous, the dorsal sepal narrowly scaphoid, acute, concave, 7-22 mm long, 1-2.5 mm wide, 1-2 mm deep, 3-veined, free from or adherent to the lateral sepals, the lateral sepals narrowly ovate, acute, connate 5-11 mm, or adherent above the middle, into a bifid, scaphoid synsepal, 7-22 mm long, 4-7.5 mm wide unexpanded; **petals** translucent yellow or white, variously spotted or veined in red or purple, glabrous, elliptic-obovate, acute, 2-6 mm long, 1-2 mm wide, 2- to 3-veined; **lip** white, dotted with purple, narrowly elliptical-oblong, obtuse, 4-8 mm long, 1.5-2.5 mm wide, shallowly sulcate between low, minutely verrucose calli along the middle third to near the apex, the apex minutely verrucose, the base truncate, hinged to the column-foot; **column** longitudinally winged, 2-5 mm long, dentate at the apex, the anther, rostellum and stigma ventral, the foot thick, 1-2 mm long.

VENEZUELA: "Caracas," alt. 5,000 ft., May 1852, *H. Wagener 120* (Holotype: W); "Caracas," *H. Wagener 145* (holotype of *P. tripterygia*: W); sine loc., *Lansberg s.n.* (W). **Zulia**: Sierra de Perijá, Río Omira-Kuná, alt. 1500-1800 m, 27 Mar. 1972, *J.A. Steyermark & G.C.K. & E. Dunsterville 105667* (AMES, VEN). Sine loc., collected by A. Mejía, cultivated in Medellín, Colombia, 7 Oct. 1977, *C. Luer 1939* (SEL).

PANAMA: **Chiriquí**: sine loc., alt. 4,500 ft., Feb. 1923, *C.W. Powell 277* (AMES, MO); alt. 4,500 ft., Oct., *C.W. Powell 245* (AMES); alt. 4,000 ft., 6 July 1919, *C.W. Powell 109* (holotype of *P. hunteriana* destroyed at B; lectotype here designated: AMES, isolectotype: K); headwaters of Río Chevo, Finca Ojode Auga, alt. 1650 m, 9 Oct. 1981, *S. Knapp 1458* (MO).
COSTA RICA: **Alajuela**: La Palma, Río Blanco between Santa Rosa and San Luis, alt. 1400 m, 18 Apr. 1961, *C. Horich 60-9-21* (MO). **Cartago**: Río Paquita, above the San Marcos bridge, ca. 1867, *A. Endres s.n.* (holotype of *Masdevallia aperta*: W). **San José**: Candelaria, Taburcia, also Rio Parrita, Dota, ca. 1867, *A. Endres s.n.* (W); sine loc., *A. Endres s.n.* (W: as "P. trionychia"). Sine loc., flowered in cultivation at K, 31 July 1916, *C. Lankester 350-15* (holotype of *P. hamata*: W; isotype: AMES); cultivated at K, 2 Aug. 1922 (K).
COLOMBIA: **Antioquia**: terrestrial, around Hato Viejo near Medellín, alt. 1800 m, *F.C. Lehmann 8240* (holotype of *Masdevallia tricarinata* destroyed at B); Quebrada Agua Clara, near Palmira, alt. 5,000-6,000 ft., Oct. 1877, *F.C. Lehmann 134* (W). **Antioquia**: Alto Murinde, collected by L.C. Vieira, cultivated in Medellín, 25 Oct. 1979, *C. Luer 4338* (SEL); Frontino, collected by H. Angarita, cultivated at Colomborquídeas, 16 May 1993, *C. Luer 16883* (MO). Sine loc., cultivated by M. & O. Robledo at La Ceja, 9 Apr. 1988, *C. Luer 13090* (MO).
ECUADOR: **Tungurahua**: southeast of Patata overlooking Baños, alt. 3070 m, 2 June 1971, *B. MacBryde 405* (AMES). **Napo**: between Baeza and Cosanga, alt. 1800 m, 14 Apr. 1985, *C. Luer, J. Luer & A. Hirtz 11267* (MO).
PERU: **Muña**: alt. 7,000 ft., 23 May-4 June 1923, *J.F. Macbride 4038* (AMES, F). **Junín**: Colonia Perene, alt. 680 m, 14-22 June 1929, *E.P. Killip & A.C. Smith 25092* (AMES, US). **Amazonas**: Chachapoyas, between Ingenio and Pomacochas, alt. 1700 m, 28 May 1963, *A. López, A. Segástegui & V. Collantes 4277* (AMES, HUT).
BOLIVIA: **Cochabamba**: Chapare, between Cochabamba and Villa Tunari, alt. 1200 m, 17 Jan. 1988, *C. Luer, J. Luer & R. Vásquez 12855* (MO). **Santa Cruz**: south of Yapacaní, alt. 650 m, 7 Sept. 1991, *C. Luer, J. Luer, L. Moreno & D. Ric 15404* (MO).
BRAZIL: **Rio de Janeiro**: forest at Cantagallo near Rio de Janeiro, *B. Rodrigues s.n.* (holotype of *Lepanthes tricarinata* is Rodrigues's illustration); sine loc., *A. Glaziou 14325* (BR); Alto Macahé, Jan. 1891, *A. Glaziou s.n.* (BR). **Paraná**: Guaraqueçaba, Serrinha, 9 Aug. 1967, *G. Hatschbach 16880* (C). **São Paulo**: Amparo, Tres Pontes, 28 May, 1927, *F.C. Hoehne s.n.* (AMES, SP-20572).

This species is relatively frequent in its wide distribution in tropical America at moderate altitudes. Individuals and populations vary greatly in size, both florally and vegetatively. The ramicauls are much shorter than the narrow leaves they bear. The inflorescence is pendent or arching, and more or less simultaneously flowered with the flowers commonly cleistogamous. The sepals are fleshy with a tall carina that includes the ovary. The petals and lip are simple. Both Reichenbach and Lindley recognized this species in *Pleurothallis* R.Br.

Reichenbach described the first two variations simultaneously, the first epithet being accepted. Kränzlin described variations of the species three times in *Masdevallia* Ruiz & Pav., and Garay transferred one of these names to *Scaphosepalum* Pfitzer. Pridgeon (2001) proposed *Anthereon* Pridgeon & M.W.Chase, an illegitimate, polyphyletic genus, with *Pleurothallis tripterantha* Rchb.f. [=*Pabstiella tripterantha* (Rchb.f.) Luer] as the holotype. *Anthereon* is illegitimate, because the holotype of another genus, *Pabstiella* Brieger & Senghas, was included as one of the six species.

Illustration: Icones-III: 94, 1986, Plate 49, C. Luer illustr. 10267, and variations, Fig. 98a, 98b, herein, C. Luer illustr. 4338, 13090.

Pabstiella yauaperyensis (Barb.Rodr.) F.Barros, Bradea 8(43): 296, 2002.

Type: *Lepanthes yauaperyensis* Barb.Rodr., Vellosia ed. 2: 117, 1891.
Ety.: Named for Rio Yauapery where the species was collected.

Syn.: *Pleurothallis mentosa* Cogn., Fl. Bras. 3(4): 400, 1896.
Ety.: From the Latin *mentosus*, "with chin," referring to the conspicuous mentum.

Syn.: *Anthereon mentosus* (Cogn.) Pridgeon & M.W.Chase, Lindleyana 16: 252, 2001.
Syn.: *Specklinia mentosa* (Cogn.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls stout, erect to suberect, 6-12 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect to suberect, coriaceous, elliptical to broadly elliptical, obtuse, 2.5-4.5 cm long, 0.8-1.5 cm wide, cuneate below into 1-5 mm long petiole. **Inflorescence** an

erect to arching, subflexuous, successively, many-flowered raceme, to 12 cm long, including the peduncle 3-5 cm long, borne from the ramicaul; floral bracts thin, tubular, 2 mm long; pedicel 6-10 mm long; ovary 3.5 mm long; flowers resupinate or non-resupinate; **sepals** yellow-green, flecked with purple, glabrous, carinate externally, the dorsal sepal narrowly ovate, acute, concave, 8-9 mm long, 3 mm wide, 3-veined, the lateral sepals connate into an ovoid, concave, obtuse, shortly acuminate, minutely bifid synsepal, 9-10 mm long, 5-6 mm wide unexpanded, 6-veined, and connate to the column-foot for a prominent, retrorse mentum; **petals** white, veined in purple, entire, oblong-obovate, obtuse, 4-4.5 mm long, 1.5 mm wide, 3-veined; **lip** white with purple flecks, obcuneate-obtriangular, broadly truncate at the apex, 5.5 mm long, 2.5 mm wide across the apex, the disc somewhat thickened with a pair of low, obscure, longitudinal calli on the middle third, with an obtuse, the base narrowly cuneate-truncate, hinged to the column-foot; **column** white, semiterete 4 mm long, longitudinally winged with the apex cucullate, the foot 2 mm long, retrorse, the anther and stigma ventral.

BRAZIL: **Amazonas**: Rio Yauapery near Chichinahu, *B. Rodrigues s.n.* (Holotype is Rodrigues's illustration): sine loc., *E. Ule 5772* (BR); cultivated at the São Paulo Botanical Garden, Jan. 1997, *C. Luer 18125* (MO).
VENEZUELA: **Amazonas**: Río Orinoco above Tama-Tama, alt. 150 m, 22 June, 1959, *J.J. Wurdack & L.S. Adderley 43134* (AMES, NY).
PERU: **Amazonas**: Bagua, Montenegro on the Río Marañon, Km 278 east of Olmos, alt. 300 m, 23 Jan. 1964, *P.C. Hutchison & J.K. Wright 3739* (AMES, UC).
BOLIVIA: **Cochabamba**: sine loc., collected by Fred Fuchs, Jr., 1974, *C. Luer 274* (SEL).

Described from along a tributary of the Amazon in Brazil, this species occurs across the Amazon basin from Peru and Bolivia in the west to Venezuela in the north. The long-pedicellate, flexuous raceme surpasses the leaves; and the flowers are conspicuously mentose with a wedge-shaped lip within the concave synsepal.

Illustration: Fig. 99, herein, C. Luer illustr. 18125.

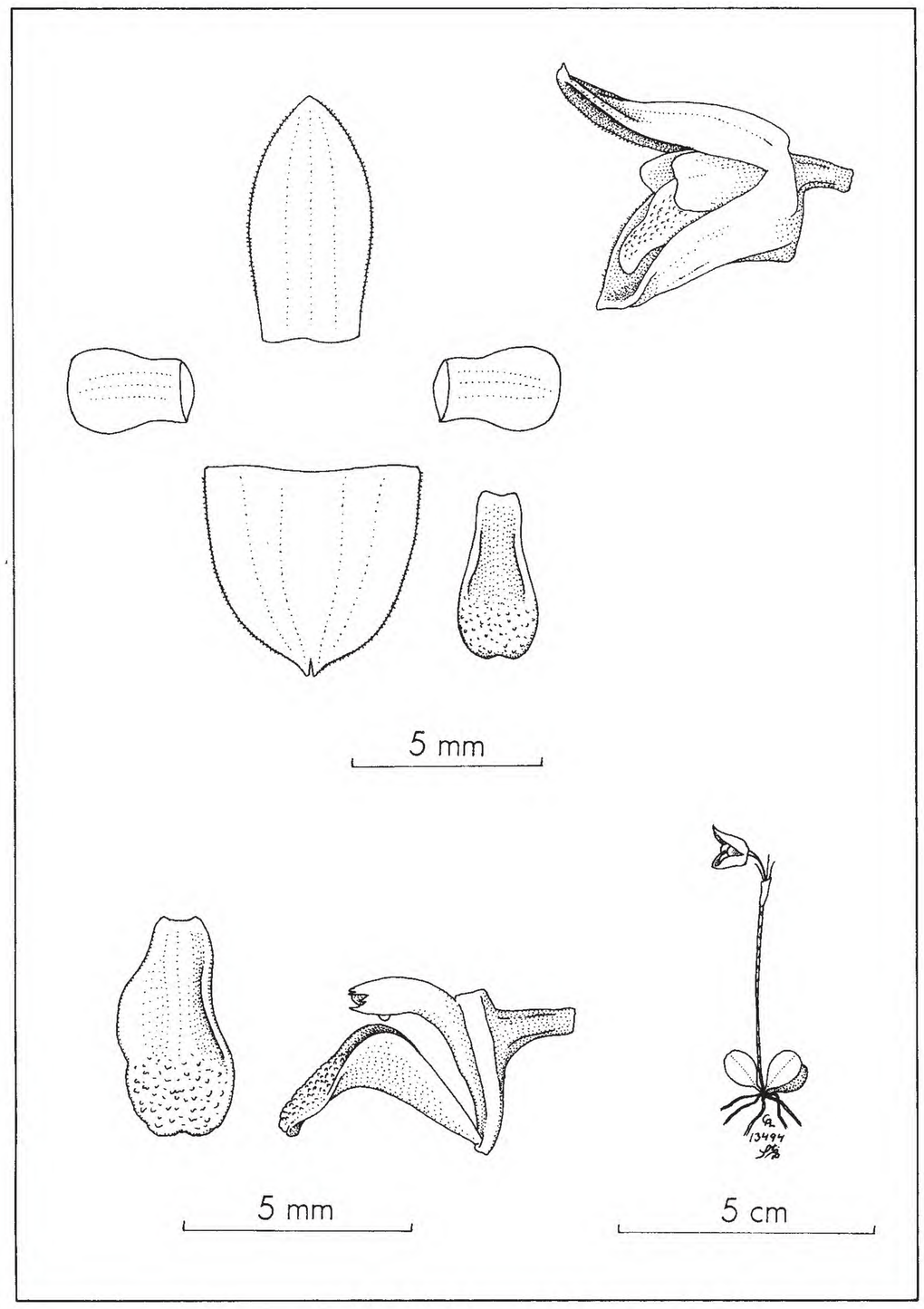


Fig. 96. Pabstiella parvifolia

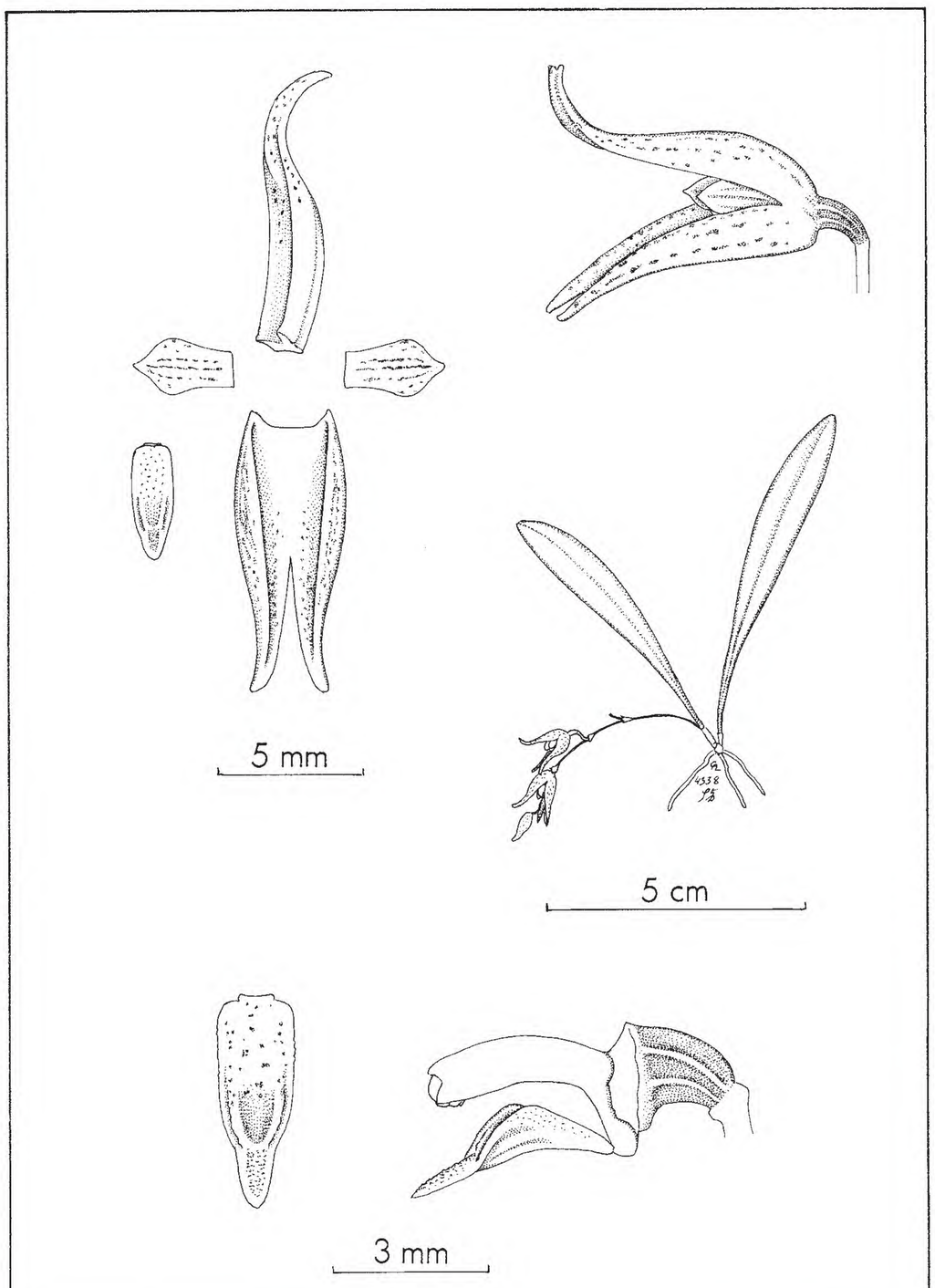


Fig. 97. Pabstiella tripterantha

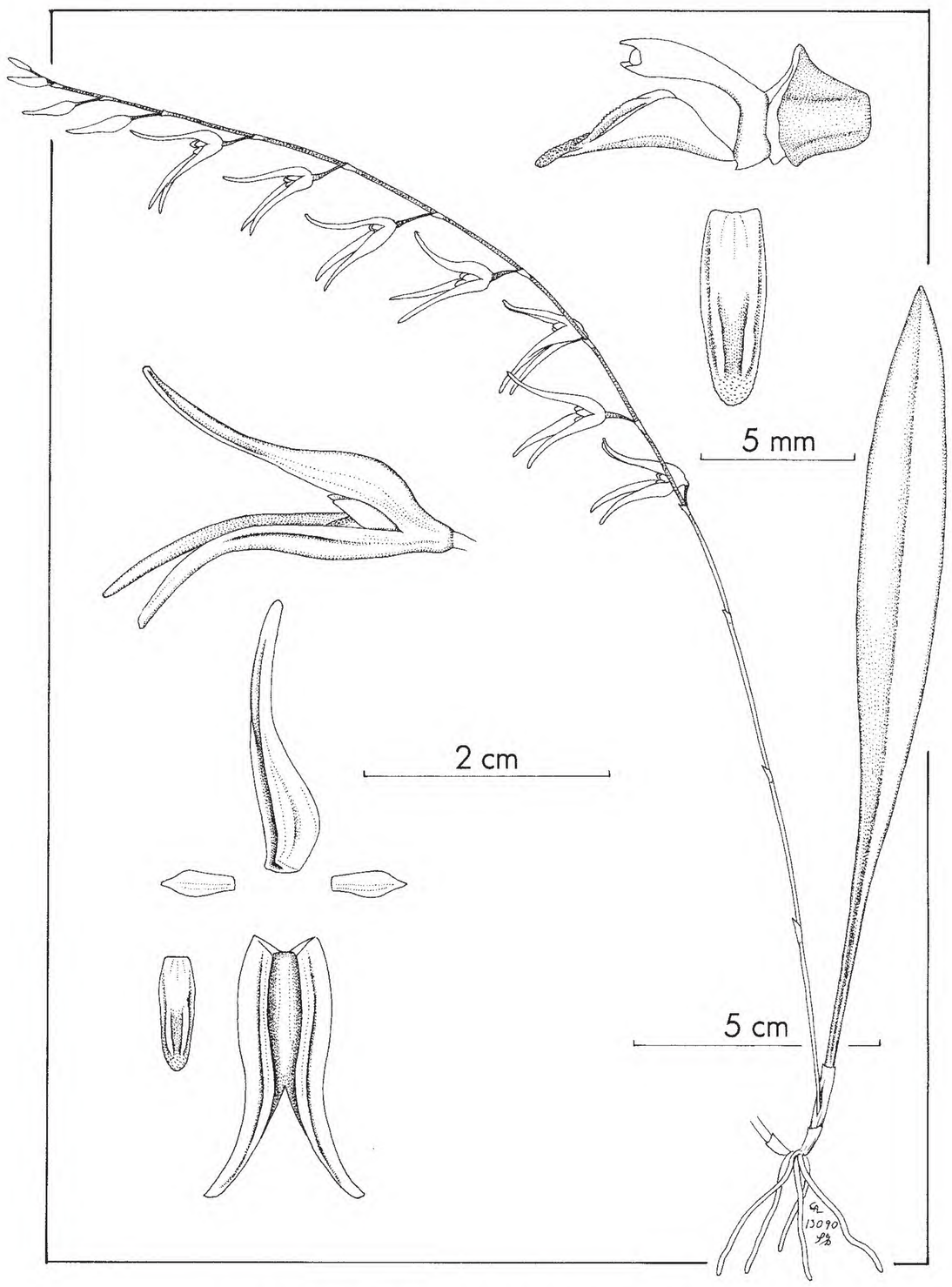


Fig. 98. Pabstiella tripterantha

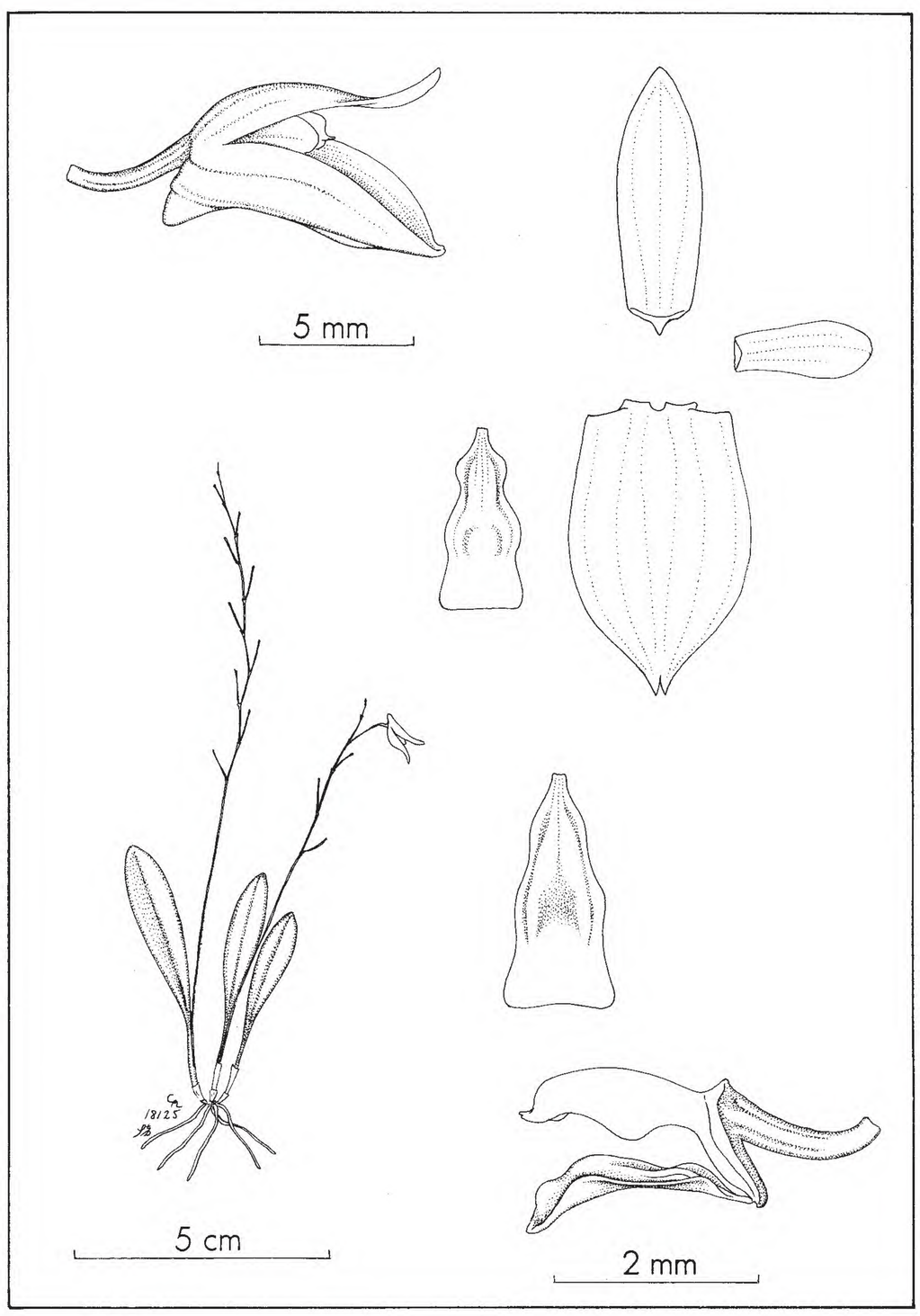


Fig. 99. Pabstiella yauaperyensis

PANMORPHIA

Panmorphia Luer, gen. nov.

Type: *Epidendrum sertularioides* Sw., Prodr. 122, 1788.

Ety.: From the Greek *panmorphius*, "of all forms," referring to the diverse morphology.

Plantae caespitosae vel repentes. Racemus congestus vel laxus. Bracteae floralium saepe glandulosae vel pubescentes. Sepala lateralia connata vel divergentia. Petala integra ciliata vel pubescentia. Labellum plerumque longitudinaliter callosum canalliculatum, ad basim plerumque lobulatum.

Syn.: *Pleurothallis* subgen. *Specklinia* sect. *Muscosae* Lindl., Edwards's Bot. Reg. 28: Misc. 82, 1842.

Type: *Epidendrum sertularioides* Sw., Prodr. 122, 1788.

Ety.: Sectional name from the Latin *muscosus*, "mossy," referring to the habitat.

Syn.: *Palmoglossum* Klotzsch ex Rchb.f., *nomen tantum*, Xenia Orch. 1: 174, 1856.

Type: *Pleurothallis crassifolia* Klotzsch ex Rchb.f., Xenia Orch. 1: 174, 1856.

Syn.: *Pleurothallis* sect. *Bipaleolatae* Pabst, Orch. Bras. 153, 1975, *nomen nudum.*

Syn.: *Pleurothallis* sect. *Subumbellatae* Pabst, Orch. Bras. 153, 1975, *nomen nudum.*

Plants very small, small, medium to large, epiphytic, lithophytic to terrestrial, caespitose to long-repent; roots slender to fleshy. Ramicauls slender to proportionately stout, erect or ascending, shorter to much shorter than the leaf, never proliferating, with 1-3, imbricating, tubular sheaths, sometimes inflated, below the middle and about the base. **Leaf** erect to prostrate, coriaceous, narrowly elliptical or narrowly obovate, to broadly elliptical or orbicular, acute to obtuse, narrowed below to a subsessile or petiolate base. **Inflorescence** usually racemose, few- to many-flowered, sometimes 1-flowered, erect to creeping, loosely to densely flowered, simultaneously to successively flowered, shorter or longer than the leaf, produced from a small, inconspicuous spathe, below but near the apex of the ramicaul with an annulus; floral bracts tubular to infundibular, sometimes glandular; pedicels short to elongate, sometimes glandular; ovary tricarpellate, terete; **sepals** glabrous, ciliate, or pubescent, obtuse to acute, but not caudate, free to variously connate; **petals** membranous, entire, ciliate or pubescent, acute to obtuse, sometimes caudate, with 1-3 veins; **lip** entire to trilobed, ciliate, denticulate or fringed, the disc usually with a longitudinal callus, more or less higher at the base (the "sun dial" callus) and lower or bifid above the middle, to shallowly channeled between low calli, or rarely featureless, the base more or less truncate, often with a lobule at the corners, usually delicately hinged to the column-foot; **column** elongate, semiterete, with the margins variously winged, the apex entire to variously denticulate, the anther ventral, deciduous, the rostellum and stigma ventral, the foot is free of calli, the pollinia 2, ovoid, free, or more or less lightly adherent to minute viscidia.

The species of *Panmorphia* Luer are distributed from southern Mexico, through Central America, the West Indies, and all South America south to Argentina, from sea level to altitudes over 3000 meters. Several affinities among the species can be recognized, but there is a continuum of variations among them.

Vegetatively, the species are caespitose or repent, with well-developed ramicauls developing among one group. The raceme is variable from loose to congested, as in *Sarcinula* Luer, strict to flexuous, shorter to longer than the leaf. The sepals are obtuse to acute. The lateral sepals are connate, semiconnate, or diverging. The petals are usually single-veined, sometimes ciliate or pubescent, but neither denticulate nor fringed. The lip most often has a longitudinal callus that is frequently channeled toward the middle, and typically elevated at the base like a sun-dial, frequently ciliate, often with marginal angles that are sometimes developed into lobes, and usually with lobules at the corners of the base. The column-foot is without a pair of calli.

Illustrations of species attributed to *Panmorphia*

New combinations for Brazilian species not illustrated herein follow on page 177,

Panmorphia abbreviata (Schltr.) Luer .....Fig. 100.
Panmorphia angulosa (Luer & Hirtz) Luer .....Fig. 101.
Panmorphia barbulata (Lindl.) Luer.....Fig. 102a, 102b.
Panmorphia brevipes (H.Focke) Luer .....Fig. 103.

Panmorphia burzlaffiana (Luer & Sijm) Luer.....Fig. 104.
Panmorphia casualis (Ames) Luer .....Fig. 105.
Panmorphia caudatipetala (C.Schweinf.) Luer.....Fig. 106.
Panmorphia clandestina (Lindl.) Luer .....Fig. 107.
Panmorphia comayaguensis (Ames) Luer .....Fig. 108.
Panmorphia cuspidata (Luer) Luer .....Fig. 109.
Panmorphia dalessandroi (Luer) Luer .....Fig. 110.
Panmorphia duplooyi (Luer & Sayers) Luer .....Fig. 111.
Panmorphia endresii (Luer) Luer .....Fig. 112.
Panmorphia escalarenis (Carnevali & Luer) Luer.....Fig. 113.
Panmorphia fractiflexa (Ames & C.Schweinf.) Luer.....Fig. 114.
Panmorphia francesiana (Luer) Luer .....Fig. 115.
Panmorphia funerea (Barb.Rodr.) Luer.....Fig. 116a, 116b.
Panmorphia grayumii (Luer) Luer .....Fig. 117.
Panmorphia haberi (Luer) Luer .....Fig. 118.
Panmorphia herpethophyton (Schltr.) Luer .....Fig. 119.
Panmorphia holstii (Carnevali & I.Ramírez) Luer.....Fig. 120.
Panmorphia humilis (C.Schweinf.) Luer.....Fig. 121.
Panmorphia imberbis (Luer & Hirtz) Luer.....Fig. 122a, 122b.
Panmorphia inversa (Luer) Luer .....Fig. 123.
Panmorphia involuta (L.O.Williams) Luer .....Fig. 124.
Panmorphia iota (Luer) Luer .....Fig. 125.
Panmorphia jamaicensis (Rolfe) Luer .....Fig. 126.
Panmorphia kuhniae (Luer) Luer.....Fig. 127.
Panmorphia lasioglossa (Schltr.) Luer.....Fig. 128.
Panmorphia lewisiae (Ames) Luer .....Fig. 129.
Panmorphia mazei (Cogn.) Luer .....Fig. 130.
Panmorphia megalophora (Luer) Luer .....Fig. 131.
Panmorphia millipeda (Luer) Luer.....Fig. 132.
Panmorphia minima (C.Schweinf.) Luer .....Fig. 133.
Panmorphia minutalis (Lindl.) Luer .....Fig. 134.
Panmorphia muricaudata (Luer) Luer.....Fig. 135a, 135b.
Panmorphia nanifolia (Foldats) Luer .....Fig. 136.
Panmorphia oblanceolata (L.O.Williams) Luer.....Fig. 137.
Panmorphia pachyphyta (Luer) Luer.....Fig. 138.
Panmorphia polygonoides (Griseb.) Luer .....Fig. 139.
Panmorphia rabei (Foldats) Luer.....Fig. 140a, 140b.
Panmorphia reptilis (Luer & Dalström) Luer.....Fig. 141.
Panmorphia ricii (Luer & Vásquez) Luer.....Fig. 142.
Panmorphia sanchezii Luer & Hirtz.....Fig. 143.
Panmorphia seriata (Lindl.) Luer.....Fig. 144.
Panmorphia sertularioides (Lindl.) Luer .....Fig. 145.
Panmorphia steinbuchiae (Carnevali & G.A.Romero) Luer.....Fig. 146.

Panmorphia abbreviata (Schltr.) Luer, comb. nov.

Bas.: *Pleurothallis abbreviata* Schltr.,/Repert. Spec. Nov. Regni Veg. 10: 352, 1912.

Ety.: From the Latin *abbreviatus*, "shortened," referring to the ramicauls.

Syn.: *Anathallis abbreviata* (Schltr.) Pridgeon & M.W.Chase, Lindleyana 16: 247, 2001.

Syn.: *Specklinia abbreviata* (Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 258, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 10-15 mm long including a petiole ca. 2 mm long, 2.5-3.5 mm wide, cuneate below into the petiole. **Inflorescence** a congested, distichous, successively many-flowered raceme, to 14 mm long, borne by a slender peduncle 12-17 mm long; pedicels 0.8 mm long; floral bracts minutely verrucose, 0.75-1 mm long; ovary 0.75 mm long; flowers deep purple; **sepals** glabrous except for an occasional, cellular verruca externally, low-carinate, the dorsal sepal oblong-ovate, obtuse, concave, 3 mm long, 1.3 mm wide, 3-veined, the lateral sepals connate to above the middle into an ovate, concave, shallowly bifid lamina with obtuse apices, 2.5 mm

long, 2.25 mm wide, 4-veined; **petals** obliquely obovate, 2 mm long, 1 mm wide, 1-veined, the apex obtuse, oblique, shortly acuminate with cellular margins; **lip** fleshy, oblong, subtrilobed, 1.8 mm long, 0.6 mm wide, the margins cellular-fimbriate with a small, erect, obtuse lobe on the basal third, the apex bilobed, the disc channeled between a pair of longitudinal calli that terminate as the apical lobes, the base minutely bi-auriculate, delicately hinged beneath to the column-foot; **column** semiterete, 1.5 mm long, longitudinally winged above the middle with the apex minutely denticulate, the foot less than 1 mm long, the anther and stigma ventral.

GUATEMALA: **Alta Verapaz**: near Cobán, alt. ca. 4,400 ft., Nov. 1877, *H. von Türckheim 10* (Holotype destroyed at B; Lectotype here designated: W); between Petet and Samac, alt. 4,800 m, Apr. 1878, *H. vov Türckheim 58* (AMES, W); collected near Cobán, Escalera, by O. Mittlestaedt, flowered in cultivation, 13 Feb. 1990, *C. Luer 14603* (MO).
MEXICO: **Chiapas**: Lago Tziscao, alt. 1500 m, 28 Oct. 1977, *E.W. Greenwood & J.P.M. Brenan 59707* (AMO), C. Luer illustr. 19174.

This very small, caespitose species, apparently uncommon and confined to Guatemala and adjacent Chiapas of Mexico, is distinguished by the densely and successively flowered raceme that eventually surpasses the leaf about twice its length. The sepals are obtuse, the laterals being connate into a synsepal. The petals are broad and sharply short-acuminate. Most distinguishing are the two longitudinal calli on the lip that protrude at the apex as two lobes.

Panmorphia angulosa (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis angulosa* Luer & Hirtz, Lindleyana 11: 146, 1996.
Ety.: From the Latin *angulosus*, "full of angles," referring to the flexuous rachis.

Syn.: *Specklinia angulosa* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 258, 2004.

Plant small, epiphytic, repent, the rhizome stout, up to 10 cm long, 5-8 mm long between ramicauls, enclosed by deciduous sheaths; roots slender. Ramicauls stout, ascending, 2-3 mm long, enclosed by 1-2 tubular sheaths. **Leaf** erect, thickly coriaceous, fleshy, elliptical, obtuse, 12-15 mm long, 6-8 mm wide, the base broadly cuneate into a petiole less than 1 mm long. **Inflorescence** an erect, zigzag, loose, successively several-flowered raceme up to 35 mm long including the peduncle 2-3 mm long, borne laterally from the ramicaul; floral bract oblique, 2.5 mm long; pedicel stout, 3 mm long; ovary 1.5 mm long; **sepals** light red-brown, thickly fleshy, carinate, non-spreading, glabrous to microscopically pubescent externally, the dorsal sepal ovate, narrowly acute, 7 mm long, 1.75 mm wide, connate to the lateral sepals for 1 mm, the lateral sepals connate 1.5 mm, narrowly ovate, acute, oblique, 7 mm long, 1.5 mm wide; **petals** light red-brown, purple toward the apex, glabrous, ovate, acute, shortly acuminate, 3 mm lo long, 1.2 mm wide; **lip** light brown with the margins and center purple, elliptical, 2.25 mm long, 1 mm wide, the margins ciliate, with low, oblique lobelike angles below the middle, the apex rounded, the disc shallowly sulcate between a pair of low parallel calli, the base subcordate, bilobulate, delicately hinged to the column-foot; **column** broadly winged, 2.5 mm long, the foot thick, 0.5 mm long, the anther, rostellum and stigma ventral.

ECUADOR: **Pichincha**: epiphytic in wet forest on the west slope of Volcán Illiniza, alt. ca. 2700 m, collected by A. Hirtz, flowered in cultivation in Quito, 7 Apr. 1985, *C. Luer 11131* (Holotype: MO).

This species is uncommon, known only from the original collection. It is distinguished from the other species of the present genus under discussion by the long-repent habit and zigzag racemes that eventually reach a length twice taller than the leaves. The sepals are thick, fleshy and carinate; the petals are shortly acuminate; and the elliptical lip is ciliate with a small pair of lobes below the middle plus the usual pair of lobules at the base.

Panmorphia barbulata (Lindl.) Luer, comb. nov.

Bas.: *Pleurothallis barbulata* Lindl., Folia Orch. *Pleurothallis* 40, 1859, replaced name for *P. barbata* H.Focke, 1853.
Ety.: From the Latin *barbulata*, "little-bearded," referring to the ciliate lip.

Syn.: *Humboldtia barbulata* (Lindl.) Kuntze, Rev. Gen. Pl. 2: 667, 1891.

Syn.: *Pleurothallis barbata* H.Focke, Bot. Zeit. 8: 227, 1853, not *P. barbata* Westc., 1841.
Ety.: From the Latin *barbatus*, "bearded," referring to the ciliate lip.

Syn.: *Pleurothallis abjecta* Ames, Sched. Orch. 2: 17, 1923.
Ety.: From the Latin, *abjectus*, "of low esteem," referring to the small habit.

Syn.: *Pleurothallis ciliilabia* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 185, 1923.
Ety.: From the Latin *ciliilabius*, "ciliate-lipped," referring to the labellum.

Syn.: *Pleurothallis nubensis* Foldats, Acta. Bot. Venez. 3: 384, 1968.
Ety.: From the Latin *nubes*, "cloud," referring to the foggy habitat.

Syn.: *Pleurothallis minutissima* Luer, Orquideología 20: 218, 1996.
Ety.: From the Latin *minutissimus*, "extremely small," referring to the size of plant and flower.

Syn.: *Anathallis barbulata* (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 247, 2001.
Syn.: *Specklinia barbulata* (Lindl.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.
Syn.: *Specklinia minutissima* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 5-8 mm long including a petiole 1-3 mm long, 2-4 mm wide, the base cuneate into the petiole. **Inflorescence** a congested, fasciculate, few-flowered raceme borne by an erect or suberect, filiform peduncle, 4-15 mm long, from near the apex of the ramicaul; floral bracts 0.5 mm long; pedicel 1 mm long; ovary 0.5-1 mm long; **sepals** red-purple, membranous, glabrous, the dorsal sepal oblong-ovate, acute, 2-3.5 mm long, 0.75-1.5 mm wide, faintly 3-veined, the lateral sepals connate into a shortly bifid, broadly ovate lamina, 1.75-2.75 mm long, 1.5-2.5 mm wide, 2-veined; **petals** translucent red-purple, ovate, acute, shortly ciliate above the middle, 1.5-2.25 mm long, 0.5-1 mm wide; **lip** maroon, oblong, ciliate, 1.2-2.25 mm long, 0.5-0.6 mm wide, the apex rounded, the margins thin and erect below the middle, the disc with a pair of longitudinal calli, in apposition at the base, slightly diverging toward the apex, the base bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 1-1.5 mm long, the anther and the stigma ventral.

SURINAME: Paramaribo, 31 Oct. 1852, illustration of *Pleurothallis barbata* by *H.C. Focke s.n.* (Holotype of *P. barbata* = illustr. by H.C. Focke: K); Paramaribo, 1 June 1852, illustr. of *P. barbata* by *H.C. Focke s.n.* (W).
FRENCH GUIANA: Sous bois, Layon de chasse au NE d'Antecume Pata, confluent de l'Itany et du Marouini, 19 Nov. 1977, *G. Cremers 5070* (CAY); Vallée de la Haute Approuague, Massif des Emerillons, 16 Dec. 1983, *C. Feuillet 1287* (CAY); Montagne de Kaw, alt. 280 m, 12 May 1986, *C. Luer & J. Luer 12236* (MO).
GUYANA: Essequibo River, Moraballi Creek near Bartica, alt. near sea level, 13 Sept. 1929, *N. Y. Sandwith 252* (K); Bartica-Potaro road, 18 Aug. 1937, *N.Y. Sandwith 1118* (K).
VENEZUELA: **Falcón**: Sierra de San Luis, *J.A. Steyermark 99482* (holotype of *P. nubensis*: VEN).
COLOMBIA: **Cauca**: near Hatico, above Popayán, alt. 5,000 ft., 20 Nov. 1878, *F.C. Lehmann s.n.* (AMES); **Valle del Cauca**: forest of Las Juntas del Dagua, west Andes of Cali, alt. 200-500 m, undated, *F.C. Lehmann 8204* (holotype of *P. minutissima*: K), C. Luer illustr. 17297, 1996.
ECUADOR: **Esmeraldas**: west of Lita toward San Lorenzo, alt. 750 m, 18 Jan. 1987, *C. Luer, J. Luer, A. Hirtz et al. 12379* (MO). **Imbabura**: Lita, alt. 700 m, *C. Luer, J. Luer & A. Hirtz 15165* (MO). *Napo*: Río Cascales east of Lumbaqui, alt. 450 m, 8 Feb. 1986, *C. Luer, J. Luer, A. Hirtz et al. 11757* (MO). *Morona-Santiago*: Cordillera del Cutucú, between Mendez and Morona, alt. 950 m, 18 Jan. 1989, *C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 13994* (MO). **Azuay**: Cordillera del Molleturo, above Río Shurimal, alt. 650 m, 27 Jan. 1992, *C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 16177* (MO).
PERU: **San Martin**: Moyobamba, along Río Mayo, alt. 815 m, 9 Dec. 1990, *D. Bennett et al. 4771* (MO).
BOLIVIA: **La Paz**: Nor Yungas, north of Caranavi toward Alto Beni, alt. 1550, 26 June 1988, *C. Luer, J. Luer, J. Solomon. et al. 12935* (MO); Sur Yungas, along Río La Paz toward Asunta, alt. 900 m, 6 Mar. 1984, *C. Luer, J. Luer & R. Vásquez 9501* (MO); Larecaja: above Tipuani, alto Llipi, alt. 1350 m, *A. Hirtz, J. del Hierro & W. Teague s.n.* (MO). **Cochabamba**: new road from Villa Tunari to Cochabamba, alt. 1320 m, *C. Luer, J. Luer, R. Vásquez et al. 18340* (MO). **Santa Cruz**: south of Yapacaní, alt. 650 m, 7 Sept. 1991, *C. Luer, J. Luer, L. Moreno & D. Ric 15401* (MO).
MEXICO: **Chiapas**: El Real, east of Ocosingo, 14 July 1954, *R.L. Dressler 1414* (AMES); Monte Libano, east of Ocosingo, 16 July, 1954, *R.L. Dressler 1426* (AMES); near Laguna Ocotal Grande, southeast of Cerro Libano, alt. 950 m, 20 July-20 Aug. 1954, *R.L. Dressler 1473* (AMES).
GUATEMALA: **Alta Verapaz**: vicinity of Chamá, alt. 900 ft., 5 Aug. 1920, *H. Johnson 905* (holotype of *P. abjecta*: AMES; isotype: US).
HONDURAS: **Comayagua**: Malcotal, Minas de Oro, alt. 4200 ft., 5 July 1932, *J.B. Edwards 195* (AMES).
COSTA RICA: **Alajuela**: San Ramón, Calera, Sept. 1867, *E. Endres 35, 45, 67* (W); heights around San Ramón, ca. 1867, *A. Endres 24, sketch 158* (W); Alto de La Calera de San Ramón, alt. 850 m, Dec. 1921, *A.M. Brenes 215* (holotype of *P. ciliilabia* presumably destroyed at B; Lectotype here designated: AMES, illustr. of type). **Cartago**: Orosi, 30 Mar. 1924, *P.C. Standley 39708* (AMES). **Guanacaste**: El Arenal, alt. 485-600 m, 19 Jan. 1926, *P.C. Standley & J. Valerio 45244* (AMES); Naranjos Agrios, alt. 600-700 m, 29 Jan. 1926, *P.C. Standley & J. Valerio 46442* (AMES). **San José**: Quebradillas north of Santa Maria de Dota, alt. 1800 m, 24 Dec. 1925, *P.C. Standley 43106* (AMES). **Puntarenas**: road to San Luís, alt. 1380 m, 22 Mar. 1995, *C. Luer, J. Luer, J. Atwood & G. Barbosa 17470* (MO); Monteverda Community, Lowther property, alt. 1475 m, 19 July 1989, *J.T. Atwood 89-299* (MO, SEL).

This tiny species is relatively frequent and widely distributed through Central and South America at lower altitudes than most of its relatives. Focke's illustrations made in Suriname in 1852 are accurate. It is characterized by the minute, caespitose habit with elliptical leaves borne by short ramicauls. The flower is produced successively in a congested, fasciculated raceme at the tip of the peduncle; the sepals are glabrous with the laterals mostly connate; the petals are acute and minutely ciliate; and the protruding lip is oblong, longitudinally callous and ciliate.

Panmorphia brevipes (H.Focke), Luer, comb. nov.

Bas.: *Pleurothallis brevipes* H.Focke, Tijdschr. Wis-Natuurk. Wetensch. 2: 198, 1849.
Ety.: From the Latin *brevipes*, "short-foot," referring to the ramicaul shorter than the leaf.

Syn.: *Lepanthes modesta* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 62, 1882.
Ety.: From the Latin *modestus*, "modest," referring to the humble appearance of the plant.

Syn.: *Humboldtia brevipes* (H.Focke) Kuntze, Rev. Gen. Pl. 2: 667, 1891.
Syn.: *Pleurothallis modesta* (Barb.Rodr.) Cogn., Fl. Bras. 3(4): 449, 1896.
Syn.: *Anathallis brevipes* (Focke) Pridgeon & M.W.Chase, Lindleyana 16: 247, 2001.
Syn.: *Specklinia brevipes* (H.Focke), Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-4 cm long, enclosed by 2-3 ribbed, closely fitting, tubular sheaths. **Leaf** erect, coriaceous, sometimes dotted with purple, elliptical to narrowly elliptical, acute, 2-5.5 cm long including a petiole 0.5-1 cm long, 0.5-1.5 cm wide, cuneate below into the petiole. **Inflorescence** a successively 3- to 7-flowered raceme up to 2.5 cm long including the peduncle 1-5 mm long, from a node below the abscission layer; floral bracts 2-3 mm long; pedicel 2-3 mm long; ovary 1-1.5 mm long; **sepals** fleshy, rosy yellow, brownish yellow, or orange, glabrous, subcarinate, the dorsal sepal ovate, acute, 5-6 mm long, 2-2.5 mm wide, 3-(5-)veined, the lateral sepals connate below the middle, ovate, oblique, acute, 5-6.5 mm long, 1.5-2 mm wide, 2-(4-)veined; **petals** yellow, red at the tip, elliptical-ovate, more or less minutely erose on the upper margin, acute, 3-4 mm long, 1.5 mm wide, 1-veined; **lip** red-purple, elliptical-oblong, obtuse, 2 mm long, 0.6-1 mm wide, with the margins slightly dilated and minutely ciliate-serrulate below the middle, disc shallowly sulcate, the base subtruncate, minutely bilobulate, hinged to the column-foot; **column** semiterete, 1.5-2 mm long, winged above the middle, denticulate-fimbriate at the apex, with the anther, rostellum and stigma hooded and ventral, the foot 0.5-1 mm long.

SURINAME: Paramaribo, 31 Oct. 1845, *H.C. Focke 69 illustr.* (Holotype: W).
BRAZIL: **Rio de Janeiro**: mountains near Rodeio, *B. Rodrigues s.n.* (holotype of *P. modesta* = illustr. of B. Rodrigues). **Pará**: *Wullschlaegel 1589* (AMES, BR, W).
BOLIVIA: **La Paz**: Nor Yungas, north of Caranavi toward Alto Beni, alt. 1550, 26 Jan. 1988, *C. Luer, J. Luer, R. Vásquez & J. Solomon 12937* (MO). **Santa Cruz**: near Samaipata, collected by Fred Fuchs, Jr., flowered in cultivation 5 July 1974, *C. Luer 236* (SEL).
COLOMBIA: sine loc., cultivated in Medellín by A. Mejía, 9 Oct. 1977, *C. Luer 1961* (SEL). **Meta**: Munic. Puerto Rico, cultivated in Medellín by R. Londoño, 20 Mar. 1989, *C. Luer 14303* (MO).
ECUADOR: **Pastaza**: south of Puyo toward Macas, alt. 950 m, 28 Feb. 2001, *C. Luer, J. Luer & A. Hirtz 19557* (MO). **Morona-Santiago**: near Sucua, alt. ca. 900 m, collected and cultivated in Macas by A. Zhiminaicala, 1 Mar. 2001, *C. Luer 19594* (MO); near Pangui, alt. 600 m, cultivated at Ecuagenera, Gualaceo, Apr. 2001, *A. Hirtz 7558* (MO).
PERU: **Amazonas**: Bagua, summit of Abra Huahuajin pass, Río Marañon highway below Montenegro, alt. 800 m, 21 Jan. 1961, cultivated June 1964, *P.C. Hutchison & J.K. Wright 3700* (AMES, UC).

This species is relatively frequent in its wide distribution across northern South America and as far south as Rio de Janeiro. It is characterized by ramicauls only slightly shorter than the leaf. The flowers are borne successively in a raceme much shorter than the leaf. The sepals are acute and free above the base; the petals are also acute; and the oblong lip is minutely ciliate-serrulate with slightly dilated margins below the middle. The base is minutely bilobulate.

Panmorphia brevipes is one of several species in the genus with well-developed ramicauls. Thought was given to segregate them into another genus, but when all are viewed, a continuum into short ramicauls is found.

Panmorphia burzlaffiana (Luer & Sijm) Luer, comb. nov.

Bas.: *Pleurothallis burzlaffiana* Luer & Sijm, Rev. Soc. Bol. Bot. 3: 43, 2001.
Ety.: Named for Ingrid Burzlaff of Graasten, Denmark, who cultivates this species.

Syn.: *Pleurothallis succuba* Luer, Rev. Soc. Bol. Bot. 4: 19, 2003.
Ety.: From the Latin *succubus*, referring to new growth rising behind the margin of preceding leaf.

Syn.: *Specklinia succuba* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.
Syn.: *Specklinia burzlaffiana* (Luer & Sijm) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, repent, the rhizome stout, 1-2 mm long between ramicauls, 1 mm thick; roots proportionately stout. Ramicauls stout, 1 mm long, enclosed by 1 thin, tubular sheaths. **Leaf** suberect to prone, overlapping, thickly coriaceous, elliptical, obtuse, 8-9 mm long, 4.5-5 mm wide, cuneate below into the sessile base. **Inflorescence** a successively few-flowered raceme up to 3 mm long including the peduncle 2-2.5 mm long, arising laterally from the ramicaul; floral bract 1-1.5 mm long; pedicel 2-2.5 mm long; ovary winged, 1 mm long; **sepals** purple, fleshy, subcarinate, ciliate, the dorsal sepal ovate, acute, 5 mm long, 2 mm wide, 3-veined, the lateral sepals connate 1.5 mm, ovate, oblique, acute, 5 mm long, 1.5 mm wide, 3-veined; **petals** purple, narrowly linear-ovate, acute, ciliate-pubescent, 4 mm long, 0.6 mm wide, 1-veined; **lip** dark purple, spathulate-trilobed, 1.5 mm long, 0.6 mm wide, suborbicular above the middle, oblong below the middle with a small, erect, ciliate, marginal lobe, the disc with a longitudinal carina on the claw below the middle, the base bilobulate, hinged between to the column-foot; **column** winged above the middle, denticulate at the apex, 1.5 mm long, with the anther, rostellum and stigma hooded and ventral.

Sine loc., obtained from Ingrid Burzlaff of Graasten, Denmark, flowered in cultivation in Venhuizen, the Netherlands, 11 Aug. 2000, by *A.P. Sijm 200728* (Holotype: MO), C. Luer illustr. 19385.

Although collection data are unknown, this species most probably is Andean in origin. It is characterized by small, thick, elliptical, overlapping leaves borne by a creeping rhizome; short, few-flowered racemes; acute sepals and ciliate-pubescent petals; and a lip that is suborbicular above the middle, and bilobulate below the middle with a longitudinal callus.

Panmorphia casualis (Ames), Luer, comb. nov.

Bas.: *Pleurothallis casualis* Ames, Sched. Orch. 9: 30, 1925.
Ety.: From the late Latin *casualis*, "by chance," an obscure reference.

Syn.: *Anathallis casualis* (Ames) Pridgeon & M.W.Chase, Lindleyana 16: 248, 2001.
Syn.: *Specklinia casualis* (Ames), Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 8-11 mm long including a petiole 2-3 mm long, 4-5 mm wide, the base cuneate into the petiole. **Inflorescence** a loose, successively, few-flowered raceme with the flowers 1-3 mm apart, borne by an erect or suberect, filiform peduncle, 5-6 mm long, from near the apex of the ramicaul; floral bracts 1.3 mm long; pedicel 1.5 mm long; ovary 0.5-1 mm long; **sepals** red-purple, membranous, glabrous to minutely pubescent within, the dorsal sepal oblong-ovate, acute, 3-4 mm long, 1-1.3 mm wide, faintly 3-veined, the lateral sepals connate into a shortly bifid, broadly ovate lamina, 3-3.3 mm long, 2-2.2 mm wide, 2-veined (faintly 4-veined); **petals** translucent red-purple, glabrous, ovate, oblique, 2-2.6 mm long, 0.8-1 mm wide, the apex acute, acuminate into a narrowly terete, minutely ciliate tail; **lip** maroon, oblong, minutely ciliate, 1.6 mm long, 0.6 mm wide, the apex rounded, the margins thin an erect below the middle, the disc shallowly sulcate between a pair of longitudinal calli, in apposition at the base, slightly diverging toward the apex, the base bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 1-1.5 mm long, the anther and the stigma ventral.

COSTA RICA: **San José**: La Hondura, alt. 1300-1700 m, 2 Mar. 1924, *P.C. Standley 36517* (Holotype: AMES; Isotype: US). **Alajuela**: La Palma de San Ramón, alt. 1150 m, 11 Aug. 1925, *A.M. Brenes (197)1391* (AMES). **Guanacaste**: Monteverde, *S. Ingram & K. Ferrell-Ingram 1267* (CR, MO), C. Luer illustr. 17064; Monteverde, *S. Ingram & K. Ferrell-Ingram 1723* (CR, MO),
C. Luer illustr. 17049.
PANAMA: **Panamá**: Altos de Pecora road, alt. 650 m, *C. Luer, J. Luer 1082* (SEL).

This little species is related to the frequent and widely distributed *Panmorphia barbulata* (Lindl.) Luer. It is distinguished from the latter by a short and lax, instead of a fasciculate raceme, and glabrous petals contracted above

the middle into a slender, terete, minutely ciliate tail, that is often thickened at the tip. Variations between *P. barbulata* and *P. casualis* occur. It is also similar to the Andean *P. caudatipetala* (C.Schweinf.) Luer, which is distinguished by the slender and essentialy glabrous tail of the petals. The ciliate, centrally cleft lips of all three species are similar.

Panmorphia caudatipetala (C.Schweinf.) Luer, comb. nov.

Bas.: *Pleurothallis caudatipetala* C.Schweinf. Bot. Mus. Leafl. 10: 175, 1942.

Ety.: From the Latin *caudatipetalus*, "with caudate petals," referring to the tips of the petals.

Syn.: *Specklinia caudatipetala* (C.Schweinf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 8-27 mm long including a petiole 3-10 mm long, 3-5 mm wide, the base cuneate into the petiole. **Inflorescence** a loose, flexuous, successively several-flowered raceme up to 3.5 cm long, including the peduncle, 10-15 mm long, borne laterally from the ramicaul; floral bracts 1-1.5 mm long; pedicels 1.5 mm long; ovary 1 mm long; **sepals** purple, or yellowish and suffused with purple or brown, membranous, ciliate, pubescent, the dorsal sepal ovate, acute, 3.5-4 mm long, 1.5 mm wide, 3-veined, the lateral sepals connate above the middle into a bifid, ovate lamina, 3.25-3.5 mm long, 2-2.5 mm wide, 4-veined; **petals** glabrous, translucent, red-purple toward the apex, the blade elliptical below the middle, 1.5 mm long, 1.25 mm wide, the apex obtuse, abruptly acuminate near the middle into a slender tail, 1-1.5 mm long; **lip** purple, oblong to subpandurate, ciliate above the middle, 1.75 mm long, 0.75-1 mm wide, the apex rounded, the margins thin and slightly incurved below the middle, the disc with a pair of longitudinal calli, in apposition at the base, diverging toward the middle, joining again toward the apex, the base bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 1.25-1.5 mm long, the anther and the stigma ventral.

PERU: **Junín**: Chanchamayo Valley, alt. 1500 m, Mar. 1950, *C. Schunke 1307* (Holotype: F). **Cuzco**: Huancabamba, Machu Picchu, alt. 2040 m, 16 Apr. 1943, *C. Vargas 3367* (AMES, herb. Vargas); Urubamba, Machu Picchu, on rocks, alt. 2040 m, ca. 16 Apr. 1948, *C. Vargas 3367* (AMES).
BOLIVIA: **La Paz**: Nor Yungas, Yierbani, alt. 2750 m, collected by M. Manon, 5 Feb. 1980, *C. Luer 5132* (SEL). **Cochabamba**: Chapare, between Cochabamba and Villa Tunari, alt. 1200 m, 17 Jan. 1988, *C. Luer, J. Luer & R. Vásquez 12854* (MO).
ECUADOR: **Pichincha**: old road between Quito and Santo Domingo, collected by C.H. Dodson, cultivated at SEL, 1975, *C. Luer 565* (SEL).
COSTA RICA: **San José**: near Cascajal, alt. 1700 m, collected and cultivated by W. Ballestero, 21 Mar. 1986, *B. Luer 12137* (MO).

This little, tufted plant is indistinguishable from numerous other, small, similar, pleurothallis species with abbreviated ramicauls. It apparently is infrequent although widely distributed from Central America into the Andes. It is characterized by a lax, flexuous, successively flowered raceme that surpasses the leaves. The sepals are acute an variously ciliate and pubescent. The petals are glabrous, elliptical below the middle, and contracted near the middle into a narrowly linear, apical portion. The lip is oblong to subpandurate and ciliate above the middle. A pair of longitudinal calli begin tall above the middle, diverge near the middle, and in apposition at the base.

Panmorphia clandestina (Lindl.) Luer, comb. nov.

Bas.: *Pleurothallis clandestina* Lindl., Folia Orch. *Pleurothallis* 43, 1859.

Ety.: From the Latin *clandestinus*, "secret," possibly referring to the rounded tubercle at the tip of the lip in Fendler's sketch that Lindley was unable to verify.

Syn.: *Humboldtia clandestina* (Lindl.) Kuntze, Rev. Gen. Pl. 2: 667, 1891.
Syn.: *Pleurothallis zorrocuchensis* Luer, Selbyana 5: 188, 1979.
Ety.: Named for Lago Zorrocucho in southern Ecuador where the species was collected.

Syn.: *Anathallis clandestina* (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 248, 2001.
Syn.: *Specklinia clandestina* (Lindl.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, repent, branching, up to 5 cm long or longer, 2-4 mm long between ramicauls; roots slender, from nodes along the rhizome. Ramicauls stout, 1-1.5 mm long, enclosed by a thin, tubular sheath. **Leaf** suberect to prostrate, coriaceous, elliptical, subacute to obtuse, 5-12 mm long, 4-6 mm wide, broadly cuneate below into the subpetiolate base. **Inflorescence** 2-3 suberect, sublax, distichous, successively 2- to 4-flowered raceme up to 5-8 mm long including the peduncle 1-2 mm long, from a node at the apex of the ramicaul; floral bract 1-1.5 mm long; pedicel 1-2 mm long; ovary tricostate, 1 mm long; **sepals** light yellow, suffused with brown, glabrous, subcarinate, the dorsal sepal ovate, subacute, 3.8-4 mm long, 2.25-2.5 mm wide, 3-veined, the lateral sepals connate into an ovate, subacute, minutely bifid synsepal, 3.5 mm long, 2.5 mm wide, 2-veined; **petals** light brown, narrowly ovate, acute, entire to microscopically suberose, 3 mm long, 0.5-0.8 mm wide, 1-veined; **lip** yellow with white appendages, obovate, 2.1 mm long, 0.9 mm wide, the apex rounded with an obscure, midline callus, the sides covered with long, glandular hairs, the disc shallowly concave, the base subtruncate, bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 1.25-1.75 mm long, with the anther, rostellum and stigma hooded and ventral.

VENEZUELA: sine loc., 1854-56, *A. Fendler 2148* (Holotype: K), C. Luer illustr. 19047.
ECUADOR: **Azuay**: in trees around Lago Zorrocucho, southeast of Cuenca, alt, 3000 m, 7 Feb. 1978, *C. Luer, J. Luer, A. Andreetta & M. Portilla 2473* (holotype of *P. zorrocuchensis*: SEL); same locality, in fruit, July 1977, *C. Luer, J. Luer & G. Luer 1826* (SEL).

This small species is known from two distant localities, one in Venezuela, the other in Ecuador. It is distinguished by a creeping rhizome with suberect to prostrate, elliptical leaves, and a short, successively few-flowered raceme. The dorsal sepal and synsepal are subacute. Fendler's distorted sketch shows the synsepal much larger than the dorsal sepal, which I cannot believe is correct. The petals are attenuated, those of the Ecuadorian collection being smooth while those of the Venezuelan collection are microscopically suberose. The sides of the obovate lip are covered by long, pedunculate appendages, and the apex is rounded with an obscure callus, noted by Fendler, but not confirmed by Lindley.

Panmorphia comayaguensis (Ames) Luer, comb. nov.

Bas.: *Pleurothallis comayaguensis* Ames, Bot. Mus. Leafl. 4: 31, 1936.
Ety.: Named for the department of Comayagua, Honduras, where the species was collected.

Syn.: *Anathallis comayaguensis* (Ames) Pridgeon & M.W.Chase, Lindleyana 16: 248, 2001.
Syn.: *Specklinia comayaguensis* (Ames) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant very small, epiphytic, repent, the rhizome proportionately stout, in masses up to 10 cm long, 1-2 mm long between ramicauls, enclosed by 2 thin, acuminate sheaths; roots proportionately thick . Ramicauls ascending, 0.5 mm long, enclosed by 1 thin, acuminate sheath. **Leaf** prostrate, overlapping, coriaceous, broadly elliptical, obtuse, 4.5-5.5 mm long, 3-3.5 mm wide, the base broadly cuneate into a petiole less than 0.5 mm long. **Inflorescence** an erect or suberect, congested, successively 2- to 4-flowered raceme up to 1.5 mm long, borne by a slender peduncle 2-3 mm long, laterally from the ramicaul; floral bract oblique, 1 mm long; pedicel 1.5 mm long; ovary 0.4 mm long; **sepals** red, membranous, subcarinate, non-spreading, glabrous, the dorsal sepal oblong-ovate, subacute, 2.5 mm long, 1 mm wide, 3-veined, barely connate to the lateral sepals, the lateral sepals connate into a broadly to suborbicular, minutely bifid synsepal, 2 mm long, 2 mm wide, 4-veined; **petals** glabrous except for an occasional cellular hair, ovate, oblique, 1.75 mm long, 0.8 mm wide, 1-veined, cuneate above the middle to a rounded, thickened apex; **lip** elliptic-oblong, 1.3 mm long, 0.4 mm wide, the margins erect and long-ciliate below the middle, the apex rounded, convex, cellular-papillose, the disc longitudinally sulcate between a pair of low subparallel calli for the basal 2 thirds, the base bilobulate, delicately hinged between to the column-foot; **column** broadly winged, irregularly erose at the apex, 1 mm long, the foot thick, 0.5 mm long, the anther, rostellum and stigma ventral.

HONDURAS: **Comayagua**: Minas de Oro, 29 Dec. 1932, *J.B. Edwards 338* (Holotype: AMES), C. Luer illustr. 19043.
GUATEMALA: **Alta Verapaz**: Chicayinito near Cobán, alt. 4300 ft., June 1881, *H. von Türckheim 648* (W). **Peten**: Sabana San Francisco, La Libertad, 29 Mar. 1933, *C.L. Lundell 2140, 2235* (AMES).

This tiny species is uncommon in Honduras and Guatemala. It is characterized by minute, broadly elliptical, overlapping, prostrate leaves produced in masses by a creeping rhizome. The flower is borne successively in a congested raceme shorter

than the leaf. The petals are proportionately large with a rounded, thickened apex with several cilia present on the margin. The lip is basically similar to those species related to *Panmorphia barbulata* (Lindl.) Luer: oblong, ciliate, channeled medially, and bilobulate at the base.

Panmorphia cuspidata (Luer) Luer, comb. nov.

Bas.: *Pleurothallis cuspidata* Luer, Selbyana 3: 282, 1977.
Ety.: From the Latin *cuspidatus*, "pointed," referring to the tips of the petals.

Syn.: *Anathallis cuspidata* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 248, 2001.
Syn.: *Specklinia cuspidata* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-7 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute to obtuse, 15-35 mm long including a petiole 5-10 mm long, 5-9 mm wide, the base cuneate into the petiole. **Inflorescence** a loose, flexuous, successively several-flowered raceme up to 5 cm long, including the peduncle, 1.5-2 cm long, borne laterally from the ramicaul; floral bracts 1.5-2 mm long; pedicels 1.5-2.5 mm long; ovary 1.5 mm long; **sepals** purple, membranous, glabrous, the lateral sepals pubescent centrally, the dorsal sepal ovate, acute, acuminate, 9 mm long, 2.5 mm wide, 3-veined, the lateral sepals connate into an ovate, acute, minutely bifid lamina, 9 mm long, 3.5 mm wide, 4-veined, forming a mentum with the column-foot; **petals** glabrous, translucent, red-purple, the blade obovate, 2.5 mm long, 2 mm wide, the apex obtuse, abruptly acuminate into a slender tail, 4-5 mm long; **lip** purple, oblong-subpandurate, ciliate, 2.5 mm long, 1.25 mm wide, the apex rounded, the disc with a longitudinal, minutely channeled callus, tall at the base, becoming a shallow channel toward the apex, the base bilobulate, hinged to the column-foot; **column** broadly winged, dentate at the apex, 2.5 mm long, the anther and the stigma ventral, the foot concave, 1 mm long.

PANAMA: **Chiriquí**: cloud forest, Cerro Hornito, alt. ca. 1700 m, 15 Dec. 1976, *C. Luer, A. Luer, R.L. Dressler, N.H. Williams & FL Stevenson 1335* (Holotype: SEL); trail to Cerro Pate Macho, alt. 1500-1750 m, 6 Feb. 1986, *G. McPherson & M. Merello 8273* (MO).
COSTA RICA: sine loc., ca. 1867, *A. Endres 56, sketch 666* (illustr. at W). Taus, collected by L. Glicenstein, cultivated by J & L Orchids, Easton, CT, 19 Nov. 1977, *C. Luer 2227* (SEL).
COLOMBIA: **Putumayo**: tall forest north of Valle de Sibundoy, toward San Francisco mine, alt. 2800 m, 9 Jan. 1957, *M. Ospina & J.M. Idrobo 152* (AMES, COL).
ECUADOR: **Pichincha**: data lost, *S. Dalström s.n.* (MO), C. Luer illustr. 16600.

This little, caespitose species is indistinguishable from numerous other, small, similar species. It occurs sporadically in Central America, Colombia and Ecuador. It is characterized by a lax, flexuous, successively flowered raceme that surpasses the leaves. The sepals are acuminate and glabrous, but the collection from Ecuador is minutely pubescent. The petals are contracted from below the middle into a long, filiform tail. The lip is subpandurate and ciliate. A midline callus begins tall at the base, disappearing into a shallow channel toward the apex.

Panmorphia dalessandroi (Luer) Luer, comb. nov.

Bas.: *Pleurothallis dalessandroi* Luer, Selbyana 7: 116, 1982.
Ety.: Named in honor of Dennis D'Alessandro who discovered this species.

Syn.: *Anathallis dalessandroi* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 248, 2001.
Syn.: *Specklinia dalessandroi* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant large for *Panmorphia*, epiphytic, caespitose; roots slender. Ramicauls erect, 2-3 cm long, enclosed by 3, loose, imbricating, tubular sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 4-6 cm long including a petiole 1-1.5 cm long, 1.5-2 cm wide, cuneate below into the petiole. **Inflorescence** a subcongested, successively few-flowered raceme up to 1 cm long including the peduncle 0.3 cm long, from a node near the apex of the ramicaul; floral bract 2-3 mm long; pedicel 3-4 mm long; ovary 2-3 mm long, wing-carinate; **sepals** cream-colored, lightly suffused with purple, finely pubescent within, carinate, the dorsal sepal ovate, acute, 10-12.5 mm long, 3.25 mm wide, 5- to 7-veined, the lateral sepals oblong, oblique, acute, 10-11.5 mm long, 3 mm wide, connate 1.5 mm, 5- to 6-veined; **petals** purple, narrowly triangular, acute, ciliate-pubescent, 8-9 mm long, 1.75 mm wide, 3-veined; **lip** purple, oblong-trilobed, 3 mm long, 1.3 mm wide, with the apex rounded, the lateral lobes of narrowly linear, erect, ciliate, 1 mm

long, below the middle, the disc shallowly channeled, pubescent above the base, the base subtruncate, bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 3 mm long, with the anther, rostellum and stigma hooded and ventral.
2000 m, 21 Feb. 1982, *D. D'Alessandro 168* (Holotype: SEL), C. Luer illustr. 8079; Estación Cientifica San Francisco between Loja and Zamora, alt. 2000 m, 9 Sept. 2003, *F.A. Werner 469* (GOET, MO, QCNE).

This species, apparently endemic in southern Ecuador, is closely related to the widely distributed and frequent *Panmorphia rabei* (Foldats) Luer. It is easily distinguished from the latter by the larger habit and much larger flowers with multiveined sepals. Interested readers are referred to the description above. The lateral lobes of the lip below the middle are narrow, erect, ciliate, and one millimeter long.

Panmorphia duplooyi (Luer & Sayers) Luer, comb. nov.

Bas.: *Pleurothallis duplooyi* Luer & Sayers. Rev. Soc. Bol. Bot. 3: 48, 2001.

Ety.: Named in honor of the late Ken DuPlooy, former director of the Belize Botanical Garden, who had a keen interest in the flora of Belize.

Syn.: *Specklinia duplooyi* (Luer & Sayers) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant very small, epiphytic, shortly repent, rhizome 1-2 mm long between ramicauls; roots comparatively thick. Ramicauls erect, 1-2 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** suberect to prostrate, coriaceous, lens-shaped, elliptical, subacute to obtuse, 5-8 mm long including a petiole 1 mm long, 2.5-3.5 mm wide, the base cuneate into the petiole. **Inflorescence** a subcongested, successively, few-flowered raceme borne by an erect, filiform peduncle, 20-27 mm long, laterally from the ramicaul; floral bracts 1 mm long; pedicel 1 mm long; ovary 0.8 mm long; **sepals** red-purple, membranous, glabrous, the dorsal sepal flat, oblong, acute, 5.5 mm long, 1.5 mm wide, 3-veined, the lateral sepals elliptical-oblong, acute, connate basally for 0.75 mm, 5 mm long, 1.5 mm wide, 2-veined; **petals** translucent red-purple, ovate, oblique, sharply acute, microscopically ciliate, 3.75 mm long, 1.25 mm wide; **lip** maroon, narrowly elliptical, acute, long-ciliate, 2.5 mm long, 0.75 mm wide, the disc channeled between a pair of longitudinal calli, the base bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 1.75 mm long, the anther and the stigma ventral.

BELIZE: Toledo District, Little Quartz Ridge Camp, alt. 740 m, 1 Aug. 2000, *B. Sayers 997* (Holotype: DBN; Isotype: MO), C. Luer illustr. 19392.

This tiny species is closely related to the widely distributed *Panmorphia barbulata* (Lindl.) Luer. From it, it is distinguished by a much larger flower with free lateral sepals. The petals are sharply acute and microscopically ciliate. The lip is narrowly elliptical, long-ciliate, and longitudinally channeled.

Panmorphia endresii (Luer) Luer, comb. nov.

Bas.: *Pleurothallis endresii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 172, 1999.

Ety.: Named in honor of A.R. Endres, nineteenth century collector and illustrator of Costarican orchids.

Syn.: *Anathallis endresii* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 248, 2001.

Syn.: *Specklinia endresii* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant small, epiphytic, long-repent, up to 10 cm long, the rhizome stout, 4-5 mm long between ramicauls, enclosed by 2 tubular sheaths; roots produced along the rhizome. Ramicauls suberect, 3 mm long, enclosed by a tubular sheath. **Leaf** erect, coriaceous, elliptical to narrowly obovate, 15-22 mm long, 4-5 mm wide, subacute to obtuse at the apex, narrowly cuneate below into an indistinct petiole ca. 3 mm long. **Inflorescence** a successive, 3- to 4-flowered raceme, ca. 5 mm long including the peduncle 2 mm long, borne laterally from the ramicaul; floral bract infundibular, 1 mm long; pedicel 1 mm long; ovary 1 mm long; **sepals** appear to have been purple, minutely ciliate, thickened above the middle, the dorsal sepal narrowly ovate, acute, 5.5 mm long, 1.5 mm wide, 3-veined, the lateral sepals connate 1 mm at the base, narrowly oblong-ovate, acute, 6 mm long, 1.25 mm wide, 3-veined; **petals** oblong, 2 mm long, 0.75 mm wide, 1-veined, serrate at the subacute apex; **lip** narrowly ovate, narrowly rounded at the apex, 3 mm long, 0.5 mm wide, the margins ciliate-denticulate, the disc longitudinally carinate on lower half, the carina bifurcated above the base, the base membraneously bilobulate, hinged to the column-foot; **column** semiterete, 2 mm long, long-denticulate at the apex, the anther, rostellum and stigma hooded and ventral, the foot concave.

COSTA RICA: **Cartago**: Pizirres, along road to San Cristobal, ca. 1867, *A. Endres 555* (Holotype: W), C. Luer illustr. 18576.

This small species, collected by Endres in the nineteenth century and misidentified by someone other than Reichenbach as *Pleurothallis sertularioides* [=*Panmorphia sertularioides* (Sw.) Luer], was found in Reichenbach's herbarium at W. Neither description nor illustration by Endres has been seen. I know of no recent collection. The accompanying description and illustration were made from dry and rehydrated material.

Panmorphia endresii is distinguished by a repent habit, erect elliptical leaves borne by much shorter ramicauls from which a short, successively few-flowered raceme arises. The dorsal sepal is free, but the laterals are connate basally. The sepals are narrow and ciliate; the petals are oblong and serrate; and the narrowly ovate lip is denticulate with a bifurcated callus below the middle, and bilobulate at the base.

Panmorphia escalarensis (Carnevali & Luer) Luer, comb. nov.

Bas.: *Pleurothallis escalarensis* Carnevali & Luer, Novon 13: 414, 2003.

Ety.: Named for La Escalera, "the stairway," referring to the steep mountain side where the species occurs.

Syn.: *Specklinia escalarensis* (Carnevali & Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, loose, tubular sheaths. **Leaf** erect, coriaceous, elliptic-obovate, subacute to obtuse, 9-11 mm long including a petiole 1-2 mm long, 3 mm wide, the base cuneate into the petiole. **Inflorescence** a loose, subflexuous, successively many-flowered raceme 17-27 mm long, borne by an erect or suberect, filiform peduncle, ca. 10 mm long, from near the apex of the ramicaul; floral bracts 0.5 mm long; pedicel 1-1.5 mm long; ovary 0.75 mm long; **sepals** purple, darker along the veins, membranous, glabrous, the dorsal sepal oblong-ovate, acute, 2.5 mm long, 1.5 mm wide, 3-veined, the lateral sepals connate into a shortly bifid, broadly ovate, obtuse lamina, 2.6 mm long, 2 mm wide, 4-veined; **petals** purple, ovate, oblique, acute, microscopically erose, 2 mm long, 0.75 mm wide; **lip** purple, oblong-trilobed, minutely to microscopically ciliate-erose, 1.8 mm long, 0.5 mm wide, wider across the lobes expanded, the apex rounded, with erect, oblique, marginal lobes below the middle, the disc shallowly sulcate between a pair of longitudinal calli, the base bilobulate, hinged to the tip of the column-foot; **column** winged above the middle, denticulate at the apex, 1.75 mm long, the anther and stigma ventral.

VENEZUELA: **Bolívar**: between El Dorado and Santa Elena de Uairén, alt. 300-400 m, 20 June 1994, *G. Carnevali, W. Fritz & C. Coleman 3672* (Holotype: VEN), C. Luer illustr. 18954.

This species is known to occur in only one area of lowland, northeastern Vene zuela. It is distinguished from the other species related to *Panmorphia barbulata* (Lindl.) Luer by the very small habit with a capillary, loose, subflexuous, successively flowered raceme that eventually far exceeds the leaf. The sepals are glabrous and the laterals are connate to near the apex. The petals are acute and oblique with microscopically erose margins. The lip is oblong, also microscopically ciliate-erose, with erect, oblique lobes below the middle.

Panmorphia fractiflexa (Ames & C.Schweinf.) Luer, comb. nov.

Bas.: *Pleurothallis fractiflexa* Ames & C.Schweinf., Sched. Orch. 10: 26, 1930.

Ety.: From the Latin *fractiflexus*, "flexuous," referring to the raceme.

Syn.: *Pleurothallis corynophora* Luer, Phytologia 55: 201, 1984.

Ety.: From the Greek *corynophorus*, "mace-bearing," in allusion to the prickly, clubbed petals.

Syn.: *Anathallis corynophora* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 248, 2001.

Syn.: *Specklinia fractiflexa* (Ames & C.Schweinf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed below by 2 loose, tubular sheaths. **Leaf** erect, coriaceous, elliptical to narrowly obovate, 15-28 mm long including a petiole 5-10 mm long, 3-5 mm wide, subacute to obtuse at the apex, narrowly cuneate below into the petiole. **Inflorescence** a loose, flexuous, distichous, successively many-flowered raceme, 2-8 cm long including the peduncle 1-3 cm long, borne laterally from the ramicaul; floral bracts oblique, acute, 2 mm long; pedicels 1.5-2 mm long; ovary 1 mm long; **sepals** rose-brown, subcarinate, glabrous externally, with a long, thin pubescence within, the dorsal sepal oblong-ovate, narrowly obtuse, 4.5-6 mm long, 2 mm wide, 3-veined, the lateral sepals connate into a elliptical, minutely bifid lamina, 4-5.5 mm long, 3 mm wide, 4-veined, forming an obtuse mentum with the column-foot, with the apices subacute; **petals** subfalcate, 3.5-4.5 mm long, dilated below the middle, 1.4 mm wide, 1-veined, contracted above the middle, then dilated into a pubescent, clavate apex; **lip** dark brown, subpandurate-oblong, rounded at the apex, 2 mm long, 1 mm wide, ciliate above the middle, the disc longitudinally channeled between a pair of low, longitudinal calli, the base minutely bilobulate, hinged to the column-foot; **column** winged above the middle, tridentate at the apex, 2 mm long, the anther, rostellum and stigma ventral, the foot 1 mm long.

COSTA RICA: **Heredia**: Yerba Buena, northeast of San Isidro, alt. ca. 2000 m, 22-28 Feb. 1926, *P.C. Standley & J. Valerio 49902* (Holotype: AMES); same collection data, *P.C. Standley & J. Valerio 49910* (paratype: AMES). **Guanacaste**: Monteverde, *S. Ingram & K. Ferrell-Ingram 1723* (MO, CR). Sine loc., ca. 1867, *A. Endres 42, 84* (illustrations at W).
PANAMA: **Chiriquí**: cloud forest above Guadalupe, alt. 2300 m, 6 Dec. 1983, *C. Luer, J. Luer & A. Maduro 9299* (holotype of *P. corynophora*: SEL).

Vegetatively indistinguishable from many other small, caespitose species, *Panmorphia fractiflexa* is distinguished by an elongating, successively flowering, flexuous raceme of flowers with clavate, pubescent petals. In one collection, the apices of the petals are merely terete and pubescent. The oblong lip is longitudinally channeled.

Panmorphia francesiana (Luer) Luer, comb. nov.

Bas.: *Pleurothallis francesiana* Luer, Rev. Soc. Bol. Bot. 4: 14, 2003.

Ety.: Named for Frances, wife of Stephen Manning of Tarporley, Cheshire, England, who collected this species.

Syn.: *Specklinia francesiana* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-5 mm long, enclosed by 1 tubular sheath and another at the base. **Leaf** erect, thickly coriaceous, narrowly elliptical-obovate, subacute to obtuse, 2-4 cm long including the petiole 3-10 mm long, 5-7 mm wide, the base narrowly cuneate into the petiole. **Inflorescence** a successively and distantly 4- to 5-flowered raceme 3-4 cm long including the peduncle ca. 2 cm long, from a node below the abscission layer; floral bract oblique, acuminate, minutely scabrous, 1.5-2 mm long; pedicel 2 mm long; ovary 1 mm long; **sepals** color unknown, glabrous, subcarinate, the dorsal sepal ovate, sharply acute at the tip, 3.5 mm long, 2.75 mm wide, 3-veined, the lateral sepals connate only at the base, oblong, oblique, shortly acute, 3.5 mm long, 1.5 mm wide, 3-veined; **petals** oblong, acute, acuminate, 4 mm long, 1 mm wide, 1-veined; **lip** elliptical, fleshy, 2.5 mm long, 1.25 mm wide, the apex narrowly rounded, thickened, the disc shallowly sulcate between a pair of longitudinal calli from a low, callous thickening at the base, the base subtruncate, minutely bilobulate, hinged to the column-foot; **column** semiterete, 2 mm long, denticulate at the apex, with the anther, rostellum and stigma hooded and ventral, the foot 1 mm long.

PERU: *Huánuco*: near Tingo Maria, alt. 640 m, Nov. 2000, cultivated in Tarporley, Cheshire, England, *S. Manning 817006* (Holotype: MO), C. Luer illustr. 20023.

This little species is apparently endemic in central Peru. Among the species of *Panmorphia*, it is most similar to *P. humilis* (C.Schweinf.) Luer of Venezuela. The plant is densely caespitose with very short ramicauls and narrow, thickly coriaceous leaves. The loose, successively few-flowered raceme eventually surpasses the leaf. The sepals and petals are shortly acuminate and sharply acute. The lip is elliptical and fleshy with a pair of longitudinal calli and a minute pair of basal lobules.

Panmorphia funerea (Barb.Rodr.) Luer, comb. nov.

Bas.: *Lepanthes funerea* Barb.Rodr., Vellosia 1, ed. 2: 118, 1891.
Ety.: From the Latin *funereus*, "of a funeral," without doubt referring to the purple-black color of the flowers.

Syn.: *Pleurothallis breviscapa* C.Schweinf., Bot. Mus. Leafl. 3: 79, 1935.
Ety.: From the Latin *breviscapus*, "with short scape," referring to the inflorescence shorter than the leaf of the type-specimen. In other specimens the raceme surpasses the leaf.

Syn.: *Pleurothallis praemorsa* Luer, Selbyana 3: 388, 1978.
Ety.: From the Latin *praemorsus*, "as if bitten off," referring to the tip of the lip.

Syn.: *Anathallis breviscapa* (C.Schweinf.) Pridgeon & M.W.Chase, Lindleyana 16: 248, 2001.
Syn.: *Specklinia breviscapa* (C.Schweinf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.
Syn.: *Specklinia praemorsa* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.
Syn.: *Specklinia funerea* (Barb.Rodr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. Missouri Bot. Gard. 95: 260, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls short, erect, 5-18 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, elliptical to narrowly elliptical, acute to subacute, 15-50 mm long, 5-10 mm wide, gradually narrowed below into a petiole 5-20 mm long. **Inflorescence** a subflexuous, successively few- to many-flowered raceme up to 6 cm long including the peduncle 1-3 cm long, from a node near the abscission layer; peduncle, rachis, floral bract and pedicel cellular-glandular; floral bract 1.5-2 mm long; pedicel 2-3 mm long; ovary 1-5 mm long; **sepals** dark purple, glabrous, subcarinate, the dorsal sepal narrowly elliptical-ovate, acute, 5-6.5 mm long, 1.5-1.75 mm wide, 3-veined, the lateral sepals connate only at the base, narrowly ovate-oblong, oblique, acute, recurved, 5-6.5 mm long, 1-1.5 mm wide, 3-veined; **petals** dark purple, elliptical-ovate, with the margins cellular-glandular, 2.75-3.5 mm long, 1-1.25 mm wide, 3-veined, the apex acute, sometimes minutely truncate at the tip; **lip** purple-black, narrowly elliptical-obovate, slightly convex, minutely 3-lobed, 4-5 mm long, 1-1.25 mm wide, with the margins cellular-glandular, the apex obtuse or abruptly truncate, the lateral lobes about 1 mm above the base, erect, minutely oblong, obtuse, microscopically erose, the disc slightly thickened, protruding beyond the base, the base subtruncate, bilobulate, hinged to the column-foot; **column** semiterete, 1.5-2 mm long, denticulate-fimbriate at the apex, with the anther, rostellum and stigma hooded and ventral, the foot shallowly concave.

BRAZIL: **Amazonas**: Alto-Amazonas, on Río Yauapery, tributary of Río Negro, *Barbosa Rodrigues s.n.* (Holotype is Rodrigues's illustr.).
GUYANA: sine loc., June 1897, *E.F. im Thurn 181* (holotype of *S. breviscapa*: K), C. Luer illustr. 18917.
FRENCH GUIANA: Inselberg, northwest Monts de la Trinité, alt. 300-400 m, 5 Aug. 1981, *G. Cremers 7417* (CAY).
VENEZUELA: banks of Río Icabarú, alt. ca. 1,500 ft., Apr. 1958, *G.C.K. Dunsterville 454*.
ECUADOR: **Pastaza**: rain forest 20 km east of Puyo, alt. ca. 600 m, 3 Aug. 1977, *C. Luer, J. Luer & J. Brenner 1813* (holotype of *S. praemorsa*: SEL); south of Puyo toward Macas, west of Río Palora, alt. 950 m, 28 Feb. 2001, *C. Luer, J. Luer & A. Hirtz 19557* (MO). **Esmeraldas**: wet forest west of Lita, alt. 300 m, 12 Jan. 1992, *C. Luer, J. Luer, A. Hirtz et al. 15572* (MO). **Napo**: Jatunyacu, alt. 650 m, Aug. 1991, *A. Hirtz 5429* (MO). **Morona-Santiago**: between Mendez and Morona, alt. ca. 900 m, 19 Jan. 1989, *A. Hirtz, A. Andreetta & S. Ortega 4140* (MO); near Pangui, alt. 1000 m, collected by and flowered in cultivation by Ecuagenera, Gualaceo, alt. 1000 m, 5 July 2002, *A. Hirtz 8261* (MO). **Zamora-Chinchipe**: between Loja and Zamora, alt. 800-1000 m, Dec. 1892, *F.C. Lehmann s.n.* (K, HK139); Cordillera del Condor, west of Los Encuentros, alt. 1550 m, 15 May 1988, *C. Luer, A. Hirtz, W. Teague & A. Andreetta 13471* (MO); Cordillera del Condor, east of Paquisha, alt. 1200 m, 23 Jan. 1992, *C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 16132* (MO).
PERU: **San Martin**: Moyobamba, along Río Mayo, alt. 815 m, 9 Dec. 1990, *D. Bennett, A. Bennett et al. 4769* (MO), C. Luer illustr. 14931.
BOLIVIA: **Cochabamba**: northeast of Cochabamba near Villa Tunari, alt. 680 m, 24 Jan. 1980, *C. Luer, J. Luer & R. Vásquez 4935* (MO).

This species is widely distributed across northern South America and through the Andes into Bolivia. It was first recorded by Barbosa Rodrigues in Amazonian Brazil, and was published as *Lepanthes funera* Barb.Rodr. [=*Panmorphia funera* (Barb.Rodr.) Luer] with an accurate illustration in 1891. It was also collected in Guyana by Im Thurn before the turn of the twentieth century, and described by Schweinfurth as *Pleurothallis breviscapa* C.Schweinf. [=*Panmorphia funera* (Barb.Rodr.) Luer] from this single collection 38 years later. Hydration of a flower

of the type specimen reveals the lip to be different from the description, that is, minute, lateral lobes were found to be present. The name *breviscapa* was misapplied to another, similar, but distinctly different species in *Venezuelan Orchids Illustrated*, vol. 1, 1959. Unfortunately, this led to subsequent, innumerable misidentifications in numerous herbaria. What came to be known as *Pleurothallis breviscapa* [=*Panmorphia funera* (Barb.Rodr.) Luer] is the variable species described by Foldats as *Pleurothallis rabei* Foldats [=*Panmorphia rabei* (Foldats) Luer]. Dunsterville's illustration published as *Pleurothallis breviscapa* in *Venezuelan Orchids Illustrated*, vol. 4, 1966, is misidentified as *P. ciliolata* Schltr., a species from southern Brazil. From an Ecuadorian collection, this species was published as *P. praemorsa* Luer in 1978 [=*Panmorphia funera* (Barb.Rodr.) Luer], because the truncate tips of the petals and lip appear to have been chewed off by an insect. This unusual character is variable and inconstant, the tips of the petals and lip varying from entire to truncate and marginally thickened.

Although obviously related to *Panmorphia rabei*, *P. funerea* is distinguished by a much longer peduncle that bears a successively flowered raceme from near the middle to beyond the tip of the leaf. The peduncle and rachis are microscopically pubescent. The peduncle of *P. rabei* is smooth and abbreviated, usually less than a centimeter long with a few-flowered raceme that rarely reaches near the apex of the leaf. The petals of *P. funerea* are microscopically erose, but entire to the naked eye. They are distinctly ciliate, often long-ciliate, in *P. rabei*. The lip of *P. funerea* is proportionately long, two-thirds to three-fourths as long as the sepals, and the lateral lobules are very small and near the base. The lip of *P. rabei* is no more than one-fourth as long as the sepals, and the notoriously variable lateral lobules are larger and near the middle.

Panmorphia grayumii (Luer) Luer, comb. nov.

Bas.: *Pleurothallis grayumii* Luer, Lindleyana 11: 78, 1996.

Ety.: Named in honor of Michael Grayum of the Missouri Botanical Garden who discovered this species.

Syn.: *Specklinia grayumii* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant very small, epiphytic, shortly repent, caespitose; roots slender. Ramicauls short, erect, 3-6 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, obovate, obtuse, subpetiolate, margined, 10-18 mm long, 4-6 mm wide, cuneate below into the subpetiolate base. **Inflorescence** a congested, successive, 2- to 3-flowered raceme, ca. 5 mm long including the peduncle 2-2.5 mm long, from the ramicaul; floral bracts imbricating, 1 mm long; pedicels 1 mm long; ovary 0.75 mm long; **sepals** yellow-orange, glabrous, the dorsal sepal ovate-triangular, acute, 3.5 mm long, 1.25 mm wide, 3-veined, the lateral sepals narrowly ovate-triangular, oblique, acute, 4 mm long, 1 mm wide, 3-veined, connate only at the base where they form a small mentum below the column-foot; **petals** described as dark burgundy, narrowly ovate, acute, 3 mm long, 0.6 mm wide; **lip** fleshy, narrowly oblong, obtuse, 2.5 mm long, 0.5 mm wide, slightly dilated above the middle and longitudinally channeled, terete and verruculose below the middle, the base delicately hinged to the column-foot between membranous lobules; **column** semi-terete, long-denticulate at the apex, 1.5 mm long, the foot 0.75 mm long, the anther and stigma hooded and ventral.

COSTA RICA: **Puntarenas**: Cantón Brus, along Río Jaba, downstream from Jardín Botánico Robert y Catherine Wilson, alt. 1000-1100 m, 22 Jan. 1989, *M. Grayum & T. Gruner 9270* (Holotype: CR; Isotype: MO), C. Luer illustr. 16520.

This small species is apparently rare, known only by the original collection from Costa Rica. It is distinguished by obovate leaves borne by abbreviated ramicauls. The inflorescence is a very short, successively few-flowered raceme. The sepals and petals are acute. The lip is narrowly oblong, channeled above the middle, and terete and verruculose below the middle. The base is minutely bilobulate.

Panmorphia haberi (Luer) Luer, comb. nov.

Bas.: *Pleurothallis haberi* Luer, Selbyana 23: 36, 2002.

Ety.: Named in honor of William Haber of the Missouri Botanical Garden who discovered this species.

Syn.: *Anathallis haberi* (Luer) Solano & Soto Arenas, Icon. Orch. (Mex.) 6-7: t. 520, 2002 [2003].

Syn.: *Specklinia haberi* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls short, erect, 2-3 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, obovate, obtuse, petiolate, 10-15 mm long including a petiole 2-5 mm long, 3-4 mm wide, cuneate below into the petiole. **Inflorescence** a fascicle of single, successive flowers, borne by a slender peduncle 10-12 mm long, from the ramicaul; floral bracts tubular, 2 mm long; pedicel 3 mm long; ovary 0.5 mm long; **sepals** purple, darker along the veins, fleshy, subcarinate, glabrous, the dorsal sepal ovate-triangular, acute, 3 mm long, 1 mm wide, 3-veined, the lateral sepals connate to near the apices into an ovate, bifid lamina with acute apices, 2.75 mm long, 2 mm wide, 4-veined; **petals** oblong below the middle, abruptly narrowed above obtuse, marginal angles above the middle to a narrowly obtuse apex, 2 mm long, 0.8 mm wide at the middle; **lip** fleshy, oblong, obtuse, ciliate, 2 mm long, 0.5 mm wide, with the margins thin and erect in the lower third, the disc deeply channeled longitudinally between a pair of calli that terminate in a small, erect point above the base, the base delicately hinged to the column-foot between membranous lobules; **column** semiterete, tridentate at the apex, 1.5 mm long, the foot 0.5 mm long, the anther and stigma hooded and ventral.

COSTA RICA: **Alajuela**: Reserva Biológica Monteverde, Río Peñas Blancas, alt. 900 m, 15 Dec. 1987, *W. Haber & E. Bello 7917* (Holotype: CR; Isotype: MO), C. Luer illustr. 16514.

This small species is apparently rare, or overlooked, known only by the original collection from Costa Rica. It is distinguished by obovate leaves borne by abbreviated ramicauls. The fascicle of small, single, purple flowers with darker purple stripes is borne by a hairlike peduncle nearly as long as the leaves. The sepals are fleshy, subcarinate and acute, the laterals connate to near the apices. The petals are abruptly narrowed above the middle. The oblong lip is minutely ciliate, deeply channeled down the center with a "sun-dial" callus above the base, and the base is minutely bilobulate.

Panmorphia herpethophyton (Schltr.) Luer, comb. nov.

Bas.: *Pleurothallis herpethophyton* Schltr., Repert. Spec. Nov. Regni Veg. 27: 52, 1929.

Ety.: From the Greek *herpethophyton*, "a snake-like plant," alluding to the repent habit.

Syn.: *Specklinia herpethophyton* (Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant small, epiphytic, repent, the rhizome 2-5 mm long between ramicauls, with 1-2 sheaths; roots slender from along the rhizome. Ramicauls ascending-erect, 1-3 mm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute to subacute, 1-2.5 cm long, including an indistinct petiole less than 2-3 mm long, 3-5 mm wide, gradually narrowed below to the base. **Inflorescence** a closely spaced, successively 2-flowered raceme, ca. 3 mm long including the peduncle 1 mm long, from near the apex of the ramicaul; floral bracts 0.75 mm long; pedicels 1 mm long; ovary 0.5 mm long; **sepals** fleshy, glabrous, yellow-orange, subcarinate, the dorsal sepal oblong-elliptical, acute, 4 mm long, 1.5 mm wide, 3-veined, barely connate to the lateral sepals, the lateral sepals free, oblong-ovate, oblique, acute, 3.5 mm long, 1.3 mm wide, 3-veined, barely connate at the base; **petals** translucent dark purple, glabrous, narrowly ovate, acute, 2.5 mm long, 0.6 mm wide, 1-veined; **lip** dark purple, ciliate, elliptical-oblong, shallowly longitudinally sulcate, acute, 2 mm long, 0.6 mm wide, the base with a lobule at both corners, hinged between to the column-foot; **column** semiterete, winged above the middle, denticulate at the apex, 1.75 mm long, the foot 0.5 mm long, the anther and stigma hooded and ventral.

BOLIVIA: **La Paz**: Nor Yungas, Polo-Poli bei Coroico, alt. 1100 m, Oct.-Nov. 1912, *O. Buchtien 6345* (Holotype destroyed at B; Lectotype: US here designated).
ECUADOR: **Morona-Santiago**: forest along Río Upano north of Macas, alt. 1050 m, 14 Jan. 1989, *C. Luer, J. Luer, A. Hirtz, A. & P. Jesup 13905* (MO).

This little species occurs infrequently on the eastern slopes of the Andes at relatively low altitudes. In habit, it is similar to *Panmorphia sertularioides* (Sw.) Luer. The erect, narrowly elliptical leaves are produced on short ramicauls along a pros-

trate rhizome. The inflorescence is an abbreviated, successively two-flowered raceme. The three sepals are free, the petals are acute, and the lip is oblong and ciliate with a pair of basal lobules.

The flower of the lectotype at US is in too poor condition to use, but Schlechter's detailed description applies exactly to the plant described above. The description above was made from the Ecuadorian collection.

Panmorphia holstii (Carnevali & I.Ramírez) Luer, comb. nov.

Bas.: *Pleurothallis holstii* Carnevali & I.Ramírez, Ernstia 39: 18, 1986.
Ety.: Named for Bruce Holst, who collected this species.

Syn.: *Pleurothallis deborana* Carnevali & I.Ramírez, Ann. Missouri Bot. Gard. 77: 553, 1990.
Ety.: Named for Debora, daughter of Germán and Ivón Carnevali.

Syn.: *Pleurothallis pemonum* Carnevali & I.Ramírez, Ann. Missouri Bot. Gard. 77: 555, 1990.
Ety.: Named for the Pemón Indians who live where this species occurs in Venezuela.

Syn.: *Specklinia deborana* (Carnevali & I.Ramírez) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Syn.: *Specklinia pemonum* (Carnevali & I.Ramírez) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant very small, epiphytic, shortly repent, the rhizome 1-2 mm long between ramicauls; roots proportionately thick. Ramicauls stout, reclining to ascending, 1-2 mm long, enclosed by a tubular sheath. **Leaf** more or less suberect and, overlapping, thickly coriaceous, broadly elliptical, obtuse, 6-9 mm long, 5-6 mm wide, broadly cuneate below into the subsessile base. **Inflorescence** a congested, successively 3- to 8-flowered raceme, up to 9 mm long including the peduncle ca. 2 mm long, from a node below the apex of the ramicaul; floral bracts 1-1.5 mm long; pedicels 1.5-2.5 mm long; ovary ca. 1 mm long; **sepals** free, glabrous, yellow-green, suffused with purple within, the dorsal sepal ovate, acute, ca. 3 mm long, ca. 1 mm wide, 3-veined, the lateral sepals slightly oblique, similar to the dorsal sepal; **petals** glabrous, suffused with purple, narrowly ovate, acute, oblique, ca. 3 mm long, ca. 0.8 mm wide, 1-veined, with irregular margins; **lip** purple, oblong, obtuse, cellular-glandular, ca. 1-1.5 mm long, ca. 0.5 mm wide, the base truncate with a minute basal lobule at the corners, hinged to the column-foot; **column** semiterete, winged toward the apex, ca. 1.5 mm long, the anther and stigma apparently ventral.

VENEZUELA: **Bolívar**: Cedeño, forest bordering savanna east of Río Parquaza, Km. 125 from Northern Alcabala of Puerto Ayacucho, 8 Sept. 1985, *J.A. Steyermark, B. Holst & B. Manara 131611* (Holotype: VEN; Isotype: MO); Cedeño, east of Río Parguaza, north of Puerto Ayacucho, alt. 100 m, collected by B. Holst, flowered in cultivation, June 1987, by *G. Carnevali & I. Ramírez 2317* (holotype of *P. deborana*: VEN); Quebrada Los Brasileros, south of Icabarú, alt. 480 m, Dec. 1976, *J.A. Steyermark et al. 117784* (paratype of *P. pemonum*: VEN); Río Carrao, alt. 450 m, April 1972, *G.C.K. Dunsterville & E. Dunsterville 1221* (paratypes of *P. pemonum*: AMES, VEN). **Amazonas**: Atures, road to Gavilán, east of Fundo Doña Juana, June 1987, *G.A. Romero 1334* (holotype of *P. pemonum*: VEN; isotype: TFAV).

This species occurs locally in eastern Venezuela where it was first collected by Bruce Holst on a branch of a tree about 10 meters above the ground, and described as *Pleurothallis holstii* [=*Panmorphia holstii* (Carnevali & I.Ramírez) Luer]. At the request of Germán Carnevali, Holst returned to the tree two years later for more material, which flowered in cultivation. Its only flower was illustrated and published as *Pleurothallis deborana*. No material is available for study.

Panmorphia holstii is characterized by tiny, broadly elliptical leaves borne closely on a creeping rhizome. A successively several-flowered raceme eventually reaches near the tips of the leaves. The sepals are ovate and free; the petals are similar and acute; and details of the elliptical, subacute lip are variable.

Germán Carnevali says that living material of three concepts cited above appear distinct. However, all three are repent, none is caespitose, and the morphology of the flowers of all three are identical except for minor variations of the lip that were noted in rehydrated flowers by different illustrators. More collections of fresh material are necessary for resolution of the differences seen in dried material.

The accompanying illustration is a modification of *Dunsterville 1221*, published as *Pleurothallis pemonum* in *Orchids of Venezuela, an Illustrated Field Guide*, ed. 2.

Panmorphia humilis (C.Schweinf.) Luer, comb. nov.

Bas.: *Pleurothallis humilis* C.Schweinf., Fieldiana Bot. 28: 185, 1951.
Ety.: From the Latin *humilis*, "low," referring to the size in relationship to related species.

Syn.: *Pleurothallis nortonii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 174, 1999.
Ety.: Named for Darrin Norton of Ludlow, VT, who has cultivated this species for many years

Syn.: *Anathallis nortonii* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 249, 2001.
Syn.: *Specklinia humilis* (C.Schweinf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1.5-x cm long, enclosed by tubular sheath and 1-2 other sheaths at the base. **Leaf** erect, coriaceous, elliptical, subacute, 4.5 cm long including a petiole ca. 1 cm long, 1.1 cm wide, cuneate below into the petiole. **Inflorescence** a successively and distantly 2- to 3-flowered raceme 4-5 cm long including the peduncle 2-2.5 cm long, from a node below the abscission layer; floral bract tubular, microscopically scabrous, 2.5 mm long; pedicel 8-9 mm long; ovary 3 mm long; **sepals** translucent orange, glabrous, subcarinate, the dorsal sepal ovate, acute, 5 mm long, 1.8 mm wide, 3-veined, the lateral sepals connate only at the base, narrowly ovate, oblique, acute, 5 mm long, 1.25 mm wide, 3-veined; **petals** blackish red, narrowly-ovate, acute, attenuate, 4 mm long, 0.75 mm wide, 1-veined; **lip** blackish red, elliptical-oblong, 3.25 mm long, 1 mm wide, with the margins microscopically cellular and a minute marginal lobule between the middle and basal thirds, the apex rounded, thickened, convex, the disc shallowly sulcate between a pair of longitudinal calli from a rounded, callous thickening at the base, the base subtruncate, minutely bilobulate, hinged to the column-foot; **column** semiterete, 3.5 mm long, denticulate at the apex, with the anther, rostellum and stigma hooded and ventral, the foot 1 mm long.

VENEZUELA: **Bolívar**: slopes of Quebrada O-paru-ma, between Santa Teresita and Río Pacairao, alt. 1065-1220 m, 20-21 Nov. 1944, *J.A. Steyermark 67283?* (Holotype: F); sine loc., obtained from Dunsterville by J & L Orchids, Easton, CT, cultivated in Ludow, VT, by Darrin Morton, 6 Sept. 1999, *C. Luer 19229* (holotype of *P. nortonii*: MO).

This little species is seldomly encountered in Venezuela where it is apparently endemic. Steyermark's collection described by Schweinfurth was apparently a depauperate specimen with developing capsules. A subsequent collection well-grown in cultivation by Darrin Norton at Mountain Orchids has produced a larger plant, but with the same flowers.

The species is distinguished by a ramicaul shorter than the leaf, and a sparsely flowered raceme that slightly surpasses the leaf. The few, successive flowers are widely separated and borne on long pedicels. The sepals and petals are acute. The lip is oblong with a thickened, rounded apex, a pair of small, marginal lobes below the middle, and a pair of basal lobules.

Panmorphia imberbis (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis imberbis* Luer & Hirtz, Lindleyana 11: 163, 1996.
Ety.: From the Latin *imberbis*, "beardless," referring to the glabrous labellum.

Syn.: *Pleurothallis aondae* Carnevali & G.A.Romero, Orch. Venez. ed. 2, 3: 1141, 2000.
Ety.: Named for the forest of Río Aonda in the state of Bolívar, Venezuela, where the species was collected.

Syn.: *Specklinia imberbis* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, obovate, obtuse to rounded, 15-20 mm long including the petiole 3-4 mm long, 4-6 mm wide, margined, the base cuneate into the petiole. **Inflorescence** an erect, congested, successively several-flowered raceme, borne by a filiform peduncle 20-22 mm long, borne laterally from the ramicaul; floral bracts imbricating, 3 mm long; pedicel 2.5-3 mm long; ovary, 1 mm long; **sepals** dark purple, glabrous, the dorsal sepal narrowly ovate, subacute, 3 mm long, 1.25 mm wide, the lateral sepals elliptical, oblique, subacute or obtuse, 3 mm long, connate 2 mm into a lamina 2.5 mm wide; **petals** translucent purple, glabrous, entire, ovate, oblique, obtuse, 2.5 mm long, 1.5 mm wide; **lip** purple, ovate, glabrous, 1.75 mm long, 0.8 mm wide, the margins slightly dilated and erect below the middle, the apex rounded, the disc longitudinally sulcate between a parallel pair of calli, the base subcordate, minutely bilobulate, delicately hinged to the column-foot; **column** broadly winged, lacerate at the apex, 1.75 mm long, the anther, rostellum and stigma ventral, the foot thick with the end of the ovary, 0.5 mm long, shallowly concave.

ECUADOR: **Morona-Santiago**: Cordillera del Cutucú, epiphytic in forest along the new road between Mendez and Morona, alt. ca. 900 m, 19 Jan. 1989, *A. Hirtz, A. Andreetta & S. Ortega 4136* (Holotype: MO), C. Luer illustr. 14917. **Napo**: between Puerto Napo and Misahualli, alt. 430 m, 23 June 1987, *C.H. Dodson & M.W.Chase 17230* (MO).
VENEZUELA: **Bolívar**: Guatopo, Oct. 1956, *G.C.K. Dunsterville*; forest of Río Aonda, Auyantepui, alt. ca. 600 m, Sept. 1972, *G.C.K. Dunsterville 1239* (holotype of *P. aondae*: drawing at AMES).
BRAZIL: **Amazonas**: Igarapé de Taruma near Manaus, alt. 200 m, collected by M. Madison, flowered in cultivation 19 Mar. 1979, *C. Luer 4038* (SEL).

This species is occurs in lowland eastern Ecuador, Venezuela and Amazonian Brazil. It is most similar to the relatively frequent, minute *Panmorphia barbulata* (Lindl.) Luer of higher altitudes, but *P. imberbis* is distinguished from the latter by a larger habit and by broader, obtuse, glabrous petals and glabrous lip.

Panmorphia inversa (Luer & R.Vásquez) Luer, comb. nov.

Bas.: *Pleurothallis inversa* Luer & R.Vásquez, Rev. Soc. Bol. Bot. 3: 50, 2001.
Ety.: From the Latin *inversus*, "inverted," referring to the non-resupinate flower.

Syn.: *Specklinia inversa* (Luer & R.Vásquez) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant very small, epiphytic, densely caespitose; roots slender. Ramicauls slender, erect, 2-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, broadly obovate, obtuse to rounded at the apex, 8-18 mm long including an indistinct petiole 1.5-5 mm long, 5-7 mm wide, margined, the base cuneate into the petiole. **Inflorescence** an erect, congested, successively several-flowered raceme, borne by a filiform peduncle 15-23 mm long, borne laterally from the ramicaul; floral bracts imbricating, 1.5-2 mm long; pedicel 3-4 mm long; ovary, 1 mm long; flower non-resupinate; **sepals** purple, glabrous, the middle sepal ovate, acute, 4 mm long, 1.5 mm wide, 3-veined, the lateral sepals lightly adherent into an elliptical, bifid lamina, with the apices subacute, 3.5 mm long, 3 mm wide, 4-veined; **petals** translucent purple, oblong, oblique, obtuse, 2 mm long, 1.25 mm wide, 1-veined; **lip** purple, ovate, glabrous, 2.5 mm long, 0.75 mm wide, with the margins erect below the middle, the apex narrowly rounded, the disc longitudinally sulcate between a longitudinal pair of calli, the base subtruncate, minutely bilobulate, delicately hinged to the column-foot; **column** broadly winged above the middle, lacerate at the apex, 2 mm long, the anther, rostellum and stigma ventral, the foot 1 mm long, shallowly concave.

BOLIVIA: **Cochabamba**: epiphytic in forest around Villa Tunari, alt. 400 m, 29 Nov. 1978, *C. Luer, J. Luer et al. 3580* (Holotype: SEL).

This tiny species was erroneously included as an additional collection of *Pleurothallis imberbis* [=*Panmorphia imberbis* (Luer & Hirtz) Luer] at the time of the publication of *Pleurothallis inversa* [=*Panmorphia inversa* (Luer & R.Vásquez) Luer]. Apparently endemic in lowland, central Bolivia, *Panmorphia inversa* is characterized by the minute habit with broadly obovate leaves that are surpassed by a filamentous peduncle bearing a congested raceme of successive pedicels. The flower is held non-resupinate with the middle sepal and synsepal convex in opposite directions. The petals clasp the column while the lip protrudes above.

Panmorphia involuta (L.O.Williams) Luer, comb. nov.

Bas.: *Pleurothallis involuta* L.O.Williams, Bot. Mus. Leafl. 12: 239, 1946.
Ety.: From the Latin *involutus*, "intricate," referring to the habit.

Syn.: *Anathallis involuta* (L.O.Williams) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6: X, 2003.
Syn.: *Specklinia involuta* (L.O.Williams) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant very small, epiphytic, repent, the rhizome 1-1.5 mm long between ramicauls; roots slender. Ramicauls reclining to ascending, 1-2 mm long, enclosed by a loose, tubular sheath. **Leaf** more or less prostrate, overlapping, coriaceous, elliptical, obtuse, 3-5 mm long, subpetiolate, 2-3 mm wide, cuneate below into a subpetiolate base. **Inflorescence** a sublax, subsecund, successively 3- to 4-flowered raceme, up to 15 mm long including the peduncle 10-12 mm long, from near the apex of the ramicaul; floral bracts acute, 0.75-1 mm long; pedicels 0.75 mm long; ovary 0.5 mm long; **sepals** yellow, suffused with red-purple, subcarinate, glabrous, the dorsal sepal ovate, acute, 2 mm long, 1 mm wide, faintly 3-veined, the lateral sepals connate to about the middle into a broadly ovate, bifid lamina, 2 mm long, 2 mm wide, 4-veined; **petals** translucent red, elliptical, slightly oblique, acute, thickened at the tip, 1.75

mm long, 1 mm wide, 1-veined; **lip** dark purple, long-ciliate, oblong, 1.5 mm long, O.5 mm wide, the apex rounded, the disc shallowly channeled between a pair of low, longitudinal calli, the base with a lobule at both corners, delicately hinged between to the column-foot; **column** semiterete, winged above the middle, tridentate at the apex, 1.5 mm long, the foot 0.5 mm long, the anther and stigma hooded and ventral.

MEXICO: **Michoacan**: Barranca de la Mina, southeast of Uruapan, alt. 1300 m, 20 Apr. 1933, *O. Nagel 2249* (Holotype: AMES; Isotype: MO). **Oaxaca**, Ixtlán, flowered in cultivation, *Salazar 3887*, C. Luer illustr. 19172; sine loc., flowered in cultivation by the Jesups in Bristol, CT, 18 Oct. 1975, *C. Luer 015* (SEL).

This tiny, creeping species, apparently endemic in southern Mexico, is characterized by the overlapping, elliptical leaves, from between which the tiny peduncle emerges. Great mats of intertwined, leafy ramicauls eventually develop. The successively few-flowered raceme is held above the leaves. The widely gaping flower is superficially similar to that of the frequent and widely distributed *Panmorphia barbulata* (Lindl.) Luer with the erect, dorsal sepal; bifid synsepal; entire, acute petals; and protruding, oblong, long-ciliate lip. The lip, however, is sulcate medially between a pair of longitudinal calli.

Panmorphia iota (Luer) Luer, comb. nov.

Bas.: *Pleurothallis iota* Luer, Selbyana 3: 128, 1976.
Ety.: From the Greek letter *iota*, commonly meaning something little.

Syn.: *Anathallis iota* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 249, 2001.
Syn.: *Specklinia iota* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant small, epiphytic, repent, the rhizome often 10 cm long, 3-15 mm long between ramicauls, with 2-3 sheaths; roots slender from along the rhizome. Ramicauls ascending, 4-7 mm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, acute to subacute, 1.5-4 cm long, including an indistinct petiole less than 1 cm long, 4-6 mm wide, gradually narrowed below to the base. **Inflorescence** a loose, flexuous, distichous, successively 2- to 7-flowered raceme, up to 2 cm long including the peduncle 0.5-1 cm long, from near the apex of the ramicaul; floral bracts tubular, 1.5-2 mm long; pedicels 1.5-2 mm long; ovary 1 mm long, triquetrous; **sepals** fleshy, glabrous, yellow or orange, suffused with red-brown, subcarinate, the dorsal sepal oblong-ovate, subacute to obtuse, 5-6 mm long, 1.75-2 mm wide, 3-veined, barely connate to the lateral sepals, the lateral sepals oblong-ovate, oblique, acute, 5-6 mm long, 1.5-2 mm wide, 3-veined, barely connate at the base; **petals** translucent greenish white, microscopically serrulate above the middle, oblong-ovate, acute, long-acuminate, 3-4.5 mm long, 1-1.5 mm wide, 1-veined; **lip** yellow or orange, edged in purple, glabrous to microscopically ciliate, oblong-trilobed, obtuse, 2 mm long, 1 mm wide, the lobes just below the middle, erect, triangular, antrorse, the disc with a low longitudinal callus below the middle and minutely bilobulate at the base, the base with a lobule at each corner, hinged between to the column-foot; **column** semiterete, winged above the middle, denticulate at the apex, 2-2.5 mm long, the foot 1 mm long, the anther and stigma hooded and ventral.

ECUADOR: Sine loc., collected by Janet Kuhn, cultivated at J & L Orchids, Easton, CT, 20 Oct. 1975, *C. Luer 504* (Holotype: SEL). **Loja**: between Loja and Catamayo, *B. Løjtnant 15095* (AAU, SEL), C. Luer illustr. 8071.
PERU: **Amazonas**: above Pomacochas, alt. 9,000 ft., *K. Tokach P-37* (MO), C. Luer illustr. 17828.

This little species occurs locally in southern Ecuador and adjacent northern Peru. It is characterized by a creeping rhizome with short ramicauls and narrowly obovate leaves; short, flexuous, few-flowered racemes. The sepals are acute; the petals are long-acuminate; and the lip is three-lobed below the middle. It is related to the larger *Panmorphia lasioglossa* (Schltr.) Luer with a long-ciliate lip without lateral lobes.

Panmorphia jamaicensis (Rolfe) Luer, comb. nov.

Bas.: *Pleurothallis jamaicensis* Rolfe, J. Bot. 47: 122, 1909.
Ety.: Named for Jamaica, the country of origin.

Syn.: *Specklinia jamaicensis* (Rolfe) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 10-18 mm long, enclosed by 3-4 close, ribbed, tubular sheaths. **Leaf** erect, coriaceous, elliptical, obtuse to subacute, with minutely erose margins, 25-30 mm long including a petiole 4-5 mm long, 10-12 mm wide, cuneate below into the petiole. **Inflorescence** a subcongested, successively 2- to 3-flowered raceme, 10-15 mm long including the peduncle 5 mm long, from near the apex of the ramicaul; floral bracts acute, 2 mm long; pedicels 3-4 mm long; ovary cuneate, 1.25 mm long; **sepals** light red-purple, fleshy-carinate, finely ciliate and pubescent within, narrowly ovate, acute, the dorsal sepal 7 mm long, 2 mm wide, 3-veined, connate less than 1 mm to the lateral sepals, the lateral sepals 6.5 mm long, 2 mm wide, 3-veined, forming at the base a small mentum with the column-foot; **petals** narrowly ovate, thickened above the middle, acute, finely ciliate below the middle, 5 mm long, 1 mm wide; **lip** dark purple, spathulate, 1.75 mm long, O.75 mm wide, the apical third widest, rounded, glabrous, with the margins of the basal half thin and ciliate, the disc with a longitudinal callus, the base delicately hinged to the column-foot between a pair of membranous lobules; **column** semiterete, winged above the middle, fimbriate at the apex, 2 mm long, the foot thick, 1 mm long, the anther and stigma hooded and ventral.

JAMAICA: sine loc., cultivated at Kew, flowered first of Sept. 1886, submitted by *D. Morris s.n.* (Holotype: K), C. Luer illustr. 18918.

This species is apparently endemic and rare in Jamaica, no subsequent collection known to have been made. It is related to the frequent and widely distributed *Panmorphia brevipes* (H.Focke) Luer and its several, close affiliates from the Andes and Brazil. I would suspect an error in the reported locality were it not for the minutely erose-undulate margins of the leaves, a character peculiar to numerous Greater Antillean species. Perhaps an ancient, disjunct population of *P. brevipes* eventually acquired the trait that is so widely disseminated in the Antilles into more than one genus, i.e. *Lepanthes* Sw., and *Stelis* Sw.

Shorter than the elliptical leaf with minutely erose margins, the ramicaul is nevertheless well-developed. The narrowly acute, fleshy sepals are finely pubescent within, and shortly connate basally. The petals are also narrowly acute, ciliate below the middle and thickened above. The lip is spathulate with the apical third thick, broadly rounded and flat. The margins below the middle are thin and long-ciliate. A thick, longitudinal callus extends from the delicately bilobulate base to the apical third.

Panmorphia kuhniae (Luer) Luer, comb. nov.

Bas.: *Pleurothallis kuhniae* Luer, Selbyana 3: 130, 1976.

Ety.: Named in honor of Janet Kuhn who discovered and cultivated this species.

Syn.: *Specklinia kuhniae* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 15-25 mm long, enclosed by 3-4 close, ribbed, tubular sheaths. **Leaf** erect, coriaceous, suffused with purple, elliptical, acute, 23-32 mm long, 6-7 mm wide, cuneate below into the subpetiolate base. **Inflorescence** an erect, congested, flexuous, successively many-flowered raceme, 10-35 mm long including the peduncle 10-15 mm long, from near the apex of the ramicaul; floral bracts acute, 1 mm long; pedicels 1 mm long; ovary 1 mm long; **sepals** white, suffused with rose above the middle, membranous, the dorsal sepal ovate, acute, 3 mm long, 1.5 mm wide, 3-veined, the lateral sepals ovate, oblique, acute, connate at the base to form a mentum with the column-foot, 2.5 mm long, 1.2 mm wide; **petals** white, suffused with rose, oblong, curved, subacute, ciliate, 2.25 mm long, 0.6 mm wide, 1-veined; **lip** maroon, oblong, rounded and yellow at the apex, 1.75 mm long, O.6 mm wide, microscopically pubescent, ciliate below the middle, the disc with a low, conical callus with a minutely concave summit at the base, the base bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 1.5 mm long, the foot pubescent, 0.5 mm long, the anther and stigma hooded and ventral.

PERU: sine loc., collected by Janet Kuhn, cultivated at J & L Orchids, Easton, CT, 20 Oct. 1975, *C. Luer 597* (Holotype: SEL).

This species, related to the widely distributed *Panmorphia brevipes* (H.Focke) Luer, is apparently endemic in Peru and rarely collected. It differs from *P. brevipes*

with the smaller habit and smaller flowers that are produced slowly and successively over a long period of time in a congested raceme that eventually surpasses the leaf in length. The sepals are acute; the petals are oblong, curved, subacute and ciliate; and the lip is oblong, ciliate and bilobulate at the base. The usual callus down the center of the lip is low with a minute cavity at the summit.

Panmorphia lasioglossa (Schltr.) Luer, comb. nov.

Bas.: *Pleurothallis lasioglossa* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 8: 59, 1921.
Ety.: From the Greek *lasioglossa*, "a hairy tongue," referring to the labellum.

Syn.: *Pleurothallis implexa* Luer, Phytologia 46: 367, 1980.
Ety.: From the Latin *implexus*, "entangled, interlaced," referring to the habit.
Syn.: *Anathallis implexa* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 249, 2001.
Syn.: *Specklinia lasioglossa* (Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant small to medium in size, epiphytic, repent, the rhizome up to 50 cm long, 1-2 cm long between ramicauls, with 2-3 sheaths; roots slender from along the rhizome. Ramicauls ascending, 1.5-2 cm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, acute to subacute, 5-12 cm long, including an indistinct petiole ca. 2 cm long, 0.7-1 cm wide, gradually narrowed below to the base. **Inflorescence** a loose, flexuous, distichous, successively 2- to 12-flowered raceme, up to 5.5 cm long including the peduncle 1 cm long, from near the apex of the ramicaul; floral bracts tubular, 2-2.5 mm long; pedicels 2 mm long; ovary 2 mm long, triquetrous; **sepals** fleshy, glabrous, greenish rose externally, purple within, subcarinate, the dorsal sepal narrowly ovate, acute, 10 mm long, 2 mm wide, 3-veined, connate to the lateral sepals 1 mm, the lateral sepals narrowly triangular, acute, 10 mm long, 1.75 mm wide, connate ca. 0.5 mm, 3-veined; **petals** translucent yellow-green with red margins, serrate above the middle, oblong, acute, long-acuminate, 3 mm long, 1 mm wide, 1-veined; **lip** yellow, purple centrally and along margins, long-ciliate, oblong-obovate, obtuse, 2.25 mm long, 1 mm wide, the disc longitudinally callus, tallest at the base, the base with a lobule at each corner, hinged between to the column-foot; **column** semiterete, winged above the middle, long-denticulate at the apex, 2.5 mm long, the foot 1 mm long, the anther and stigma hooded and ventral.

ECUADOR: **Chimborazo**: mountains above Riobamba, *A. Mille s.n.* (Holotype: presumably destroyed at B); epiphytic in scrubby trees east of Ríobamba, below exit tunnel above Quimay, alt. 3100 m, 14 Nov. 1979, *C. Luer, J. Luer & A. Hirtz 4793* (holotype of *P. implexa*: SEL, neotype of *P. lasioglossa* here designated: SEL); **Morona-Santiago**: near Oña, alt. 2600 m, collected by A. Sánchez, 26 July 2004, *A. Hirtz 8871* (MO).

This species, apparently rare and endemic in southern Ecuador, is characterized by a long, creeping rhizome that produces a loose, hanging, entangled mass of intertwined rhizomes and ramicauls. The ramicauls are short; the leaves are narrowly obovate; the inflorescence is a flexuous raceme of successive flowers, that usually does not surpass the leaf. The sepals are narrowly acute; the petals are serrated and long-apiculate; and the lip is minutely ciliate, oblong, with short, obtuse, marginal angles below the middle, and a thickened minutely papillose apex.

Panmorphia lewisiae (Ames) Luer, comb. nov.

Bas.: *Pleurothallis lewisiae* Ames, Proc. Biol. Soc. Wash. 44: 42, 1931.
Ety.: Named in honor of its collector, Margaret Ward Lewis.

Syn.: *Anathallis lewisiae* (Ames) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6: 11, 2003,
Syn.: *Specklinia lewisiae* (Ames) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261, 2004.

Plant very small, epiphytic, repent, the rhizome 1.5-2 mm long between ramicauls, with muriculate sheaths; roots proportionately thick. Ramicauls reclining to ascending, 1-2 mm long, enclosed by a muriculate, tubular sheath. **Leaf** more or less prostrate, overlapping, thickly coriaceous, minutely subverrucose, elliptical, obtuse, sessile, 6-15 mm long, 4-7 mm wide, cuneate below into the base. **Inflorescence** a sublax, subsecund, successively 3- to 6-flowered raceme, up to 10 mm long, borne by a slender peduncle 5-8 mm long, from near the apex of the ramicaul; floral bracts acute, muriculate, 1-2 mm long; pedicels 2-3 mm long; ovary 1-1.5 mm long; **sepals** purple to yellow, suffused with purple, subcarinate, glabrous, the dorsal sepal ovate, acute, 4.5 mm long, 1.75 mm wide, faintly 3-veined, the lateral sepals free, oblong-ovate, oblique, 4-4.5 mm long, 1-1.5 mm wide, 1-veined, forming a small mentum with the

column-foot; **petals** translucent red-purple, elliptical, acute, 3.5 mm long, 1 mm wide, 1-veined, minutely glandular-ciliate; **lip** dark purple, glandular-cellular, oblong-trilobed, subacute, 2.5 mm long, 1 mm wide, with small, erect, subacute, triangular lobes near or below the middle, the disc featureless, the base truncate, obscurely bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 2 mm long, the foot 1 mm long, the anther and stigma hooded and ventral.

GUATEMALA: **Izabal**: near Puerto Barrios, alt. 175 ft., 2 Aug. 1930, *Margaret W. Lewis 2* (Holotype: AMES). **Petén**: near Flores, flowered in cultivation, *Fred Fuchs s.n.* (SEL), C. Luer illustr. 059.
MEXICO: **Chiapas**: Ococingo, Palenque, Boca Lacantum, alt. 180 m, 10 Aug. 1984, *E. Martínez S. 6935* (MEXU, MO).
HONDURAS: **Atlantida**: Lancetilla Valley near Tela, 5 Dec. 1927 - 20 Mar. 1928, *P.C. Standley 55202* (AMES).
COSTA RICA: sine loc., ca. 1867, *A. Endres s.n.* (W). **Puntarenas**: Parqué Nacional Corcovado, alt. 10-200 m, 5 Aug. 1988, *C. Kernan & P. Philllips 771* (CR), C. Luer illustr. 16512; Golfito Jiménez, Río Piro, alt. 45 m, 16 Sept. 1990, *A. Chacón 1042* (CR); Golfito Piro, Jiménez, alt. 100 m, 9 Sept. 1991, *R. Aguilar 367* (CR, MO); Península de Osa, Sendero Sirena, alt. 10 m, 12 June 1994, *R Aguilar 3370* (INB, MO).
PANAMA: **Panamá**: Cerro Azul, 14 July 1964, *R.L. Dressler 2918* (SEL); Cerro Campana, Mar. 1971, *C.H. Dodson Sr. s.n.* (SEL), flowered in cultivation 10 Oct. 1974, C.Luer illustr. 059. *Canal Zone*: Navy Reservation north of Gamboa, 14 June 1964, *R.L. Dressler 2910* (SEL).

This little, creeping species, is widely distributed in Central America. It is characterized by the thick, slightly verrucose, elliptical, overlapping leaves, from between which the peduncle rises and bears a successively flowered raceme. The sheaths and bracts are minutely muriculate. The sepals are free, acute and spreading; the petals are acute with minutely glandular-ciliate edges; and the lip is oblong to trilobed with minute, triangular lobes near the middle.

Panmorphia mazei (Urb.) Luer, comb. nov.

Bas.: *Pleurothallis mazei* Urb., Repert. Spec. Nov. Regni Veg. 15: 104, 1919, replaced name for *P. elegantula* (Cogn.) 1909.

Ety.: Named in honor of H.P. Mazé (1818-1892), botanist who worked on the flora of Guadeloupe.

Syn.: *Pleurothallis elegantula* Cogn., Symb. Antill. 6: 411, 1909, not *Pleurothallis elegantula* Cogn. 1906.

Ety.: From the Latin *elegantulus*, "elegant," referring to the pretty, little plant.

Syn.: *Specklinia mazei* (Urb.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-1.5 mm long, enclosed by 2 loose, thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 6-12 mm long, 3-5 mm wide, cuneate below into a petiole ca. 1 mm long. **Inflorescence** a successive, loose, 2- to 3-flowered raceme, with flowers 3-4 mm apart, borne by a slender peduncle 12-20 mm long; pedicels 0.25-0.5 mm long; floral bracts 0.5-0.75 mm long; ovary 0.5 mm long; **sepals** membranous, yellow, glabrous except for marginal, microscopic, cellular excrescencies, carinate, the dorsal sepal ovate, acute (narrowly obtuse), concave, 1.75 mm long, 1.5 mm wide, faintly 3-veined, the lateral sepals connate to above the middle into an ovate, bifid, bicarinate lamina with acute apices, 2 mm long, ca. 1.5 mm wide; **petals** membranous, oblong-obovate, obtuse, 1.25 mm long, 0.4 mm wide, no visible vein; **lip** yellow, fleshy, cellular-glandular, oblong-subtrilobed, 1.75 mm long, 0.4 mm wide, 0.8 mm wide across the lateral lobes expanded, the apex rounded, the margins below the middle erect, broadly rounded, the disc cellular-verrucose, featureless, the base truncate, broadly hinged to the column-foot; **column** stout, 0.5 mm long, wingless, the anther apical, incompletely covering a pair of large, spherical pollinia without caudicles, the stigma ventral, the foot ca. 0.4 mm long.

GUADELOUPE: Bois du Nez Cassé, alt. 1050-1150 m, 1 Oct. 1903, *P. Duss 4178* (Holotype: BR, Isoytpes: AMES, BM, NY); sine loc., *P. Duss s.n.* (NY), C. Luer illustr. 19027.

Described as *Pleurothallis elegantula* Cogn., a later homonym of a Brazilian species, this tiny species is rare and endemic on the island of Guadeloupe; no recent collections are known. It is characterized by the caespitose habit with ramicauls less than two millimeters long that bear elliptical leaves mostly less than one centimeter long. The twice longer Inflorescence bears two or three flowers in a distant-

timeter long. The twice longer Inflorescence bears two or three flowers in a distantly flowered raceme. The dorsal sepal is cucullate and carinate, the laterals are connate to above the middle into a bicarinate synsepal; the petals are membranous and obtuse; and the proportionately large lip has erect, broadly rounded sides below the middle. The anther is proportionately large and exposed at the apex. It incompletely covers a pair of large, naked, spherical pollinia.

Panmorphia megalophora (Luer) Luer, comb. nov.

Bas.: *Pleurothallis megaloöphora* Luer, Phytologia 54: 387, 1983.

Ety.: From the Greek *megaloöphoros*, "bearing a large egg," referring to the ovary.

Syn.: *Anathallis megalophora* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 249, 2001.

Syn.: *Specklinia megalophora* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, epiphytic, ascending-caespitose; roots slender. Ramicauls erect, 3-5 mm long, enclosed by 1-2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, obtuse to subacute, 15-22 mm long including an ill-defined petiole 3-4 mm long, 5-8 mm wide, cuneate below into the petiole. **Inflorescence** a congested, successively several-flowered raceme, 5-15 mm long including the peduncle 3-5 mm long, from near the apex of the ramicaul; floral bracts tubular, 1.5-2 mm long; pedicels 1.5-2 mm long; ovary thickly carinate, 2 mm long, 2.5 mm wide; **sepals** purple, fleshy-carinate, concave, narrowly triangular, acute, the dorsal sepal 8 mm long, 2 mm wide, free from the lateral sepals, but not spreading, the lateral sepals 8 mm long, 1.5 mm wide; **petals** narrowly ovate, thickened above the middle, acute, minutely pubescent, 5 mm long, 1 mm wide, with the midvein thickened; **lip** glabrous, more or less oblong-5-lobed, 1.5 mm long, O.3 mm wide, ovate above the middle, narrowly obtuse, with erect, uncinate marginal lobes below the middle, the disc with a small, bilobed callus at the base, and a pair of longitudinal calli that diverge above the middle, the base truncate with a pair of pedunculate lobes at each corner, delicately hinged to the column-foot; **column** semiterete, broadly winged, 1.25 mm long, the foot 1 mm long within the apex of the thickly winged ovary, the anther and stigma hooded and ventral.

ECUADOR: **Napo**: wet forest near Río Jatuncayu west of Tena, alt. 600 m, 21 Feb. 1982, *C. Luer, A. Hirtz & X. Leon 6933* (Holotype: SEL).

This little, ascending-caespitose species, is apparently endemic and uncommon in lowland, eastern Ecuador. It is characterized by a short, congested, successively flowered raceme about half as long as the leaf. The narrow sepals are fleshy-carinate and barely open. The narrow petals are minutely pubescent. The lip is bilobed below the middle and bilobed at the base. A large, thickly winged ovary suggests cleistogamy, but the flowers fall without forming capsules.

Panmorphia millipeda (Luer) Luer, comb. nov.

Bas.: *Pleurothallis millipeda* Luer, Orquideología 20: 216, 1996.

Ety.: From the Latin *millipeda*, "a millipede," referring to the appearance of the lip.

Syn.: *Specklinia millipeda* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, presumably epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 4-5 mm long, enclosed by a loose, ribbed, tubular sheath. **Leaf** erect, coriaceous, obovate, obtuse, petiolate, 10-11 mm long, 3.5-4.5 mm wide, cuneate below into an ill-defined petiole ca. 2 mm long. **Inflorescence** an erect, loose, successively 4- to 6-flowered raceme 4-5 cm long including the slender peduncle 2 cm long, emerging laterally from the ramicaul; floral bract 1.5 mm long; pedicel 2 mm long; ovary 1.5 mm long; **sepals** dark purple, glabrous, the dorsal sepal narrowly ovate, acute, lightly concave, 5.5 mm long, 1.5 mm wide, faintly 3-veined, the lateral sepals ovate, acute, 5.5 mm long, connate 2.5 mm into an ovate, bifid lamina 2.5 mm wide; **petals** purple, oblique, 5 mm long, with the basal 1.5 mm broadly dilated, 1.25 mm wide, contracted above into a narrowly linear-subulate apex 3 mm long, with the margins cellular-glandular; **lip** purple, narrowly linear, straight, acute, 5 mm long, 0.3 mm wide, densely long-ciliate above the middle, the disc with two erect, conical calli, one in front of the other, bilobulate at the base, hinged between to the column-foot; **column** semiterete with marginal wings, denticulate at the apex, 1.5 mm long, the foot 1 mm long, with the anther deeply hooded and the stigma ventral.

COLOMBIA(probably): "Chacayacu," undated, *F.C. Lehmann s.n.* (Holotype: K), C. Luer illustr. 17298.

mm wide, 3-veined, the lateral sepals free, ovate, acute, 3-4 mm long, 1-1.5 mm wide; **petals** translucent,

This small species is known only from a single plant collected by Lehmann in the nineteenth century. The tiny tuft of obovate leaves is no different from that of numerous other allied species. The dark purple flowers are borne in loose racemes that far surpass the leaves. The sepals are narrowly ovate and acute, and the laterals are connate to above their middle. The petals are obliquely dilated above the base, then contracted into a long, cellular, filiform apex. The lip is straight, narrowly linear, and densely long-ciliate above the middle, possibly in disguise as a milliped to lure a pollinator.

Panmorphia minima (C.Schweinf.) Luer, comb. nov.

Bas.: *Pleurothallis minima* C.Schweinf., Bot. Mus. Leafl. 3: 82, 1935.
Ety.: From the Latin *minimus*, "very small," alluding to the plant and flowers.

Syn.: *Specklinia minima* (C.Schweinf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 1-2 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, broadly elliptical, obtuse, 4-7 mm long including a petiole 0.5 mm long, 2.5-3 mm wide, the base cuneate into the petiole. **Inflorescence** a congested, secund, few-flowered raceme 2-2.5 mm long, borne by an erect, filiform peduncle, 6-7 mm long, from near the apex of the ramicaul; floral bracts 0.75 mm long; pedicel 0.75 mm long; **sepals** red-purple, membranous, glabrous, the dorsal sepal oblong, subacute, 3-3.3 mm long, 1 mm wide, faintly 3-veined, the lateral sepals connate into a shortly bifid, broadly ovate lamina, 3 mm long, 2.25 mm wide, 2-veined; **petals** translucent red-purple, ovate, oblique, acute, shortly ciliate, 2.4 mm long, 0.8 mm wide; **lip** maroon, oblong, obtuse, ciliate, 2 mm long, 0.75 mm wide, the margins thin an erect below the middle, the disc with a pair of longitudinal calli, in apposition at the base, slightly diverging toward the middle, the base minutely bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 1.5 mm long, the anther and the stigma ventral.

GUYANA: Barima-Barama road, 25 Aug. 1896, *E.F. im Thurn 166* (Holotype: K); Bartica-Potaro road, 18 Aug. 1937, *N.Y. Sandwith 1117* (K).
FRENCH GUIANA: Montagne de Kaw, 7 May 1985, *C. Cremers 8685* (CAY), C. Luer illustr. 18681.

This tiny species is little more than a geographical variation of the widely distributed *Panmorphia barbulata* (Lindl.) Luer. Its only claim to distinction is its tiny habit, and a short, crowded, secund raceme, instead of a densely flowered raceme of fasciculated pedicels.

Panmorphia minutalis (Lindl.) Luer, comb. nov.

Bas.: *Pleurothallis minutalis* Lindl., Folia Orch. *Pleurothallis* 40, 1859.
Ety.: From the Latin *minutalis*, "minute," referring to the habit.

Syn.: *Pleurothallis crassifolia* Rchb.f., Linnaea 22: 832, 1849 (publ. May, 1850), not H.Focke 1849.
Ety.: From the Latin *crassifolius*, "with thick leaves," referring to the leaves.

Syn.: *Palmoglossum crassifolium* Klotzsch ex Rchb.f., nomen tantum, Xenia Orch. 1: 174, 1856.

Syn.: *Humboldtia pachyphylla* Kuntze, Rev. Gen. Pl. 666, 1891.
Ety.: From the Greek *pachyphyllos*, "with thick leaves," referring to the leaves.

Syn.: *Humboldtia minutalis* (Lindl.) Kuntze, Rev. Gen. Pl. 668, 1891.
Syn.: *Anathallis minutalis* (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 249, 2001.
Syn.: *Specklinia minutalis* (Lindl.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, epiphytic, shortly repent, rhizome 2-6 mm long; roots slender, scattered along rhizome. Ramicauls erect, slender, 2-5 mm long, enclosed by 2 ribbed, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical to narrowly obovate, subacute to obtuse, 10-30 mm long, 4-8 mm wide, cuneate below into an ill-defined petiole 1-5 mm long. **Inflorescence** a single flower, often followed by a second, or a lax, two-flowered raceme, 3-5 mm between flowers, borne by a slender, erect peduncle 10-20 mm long, emerging from the ramicaul; floral bract minutely glandular or scabrous, 1.5 mm long; pedicel 1.5 mm long similarly minutely scabrous; ovary 0.5-1 mm long; **sepals** yellow or yellow-green, sometimes suffused with orange, glabrous, carinate, the dorsal sepal ovate, acute, concave, 3-4.25 mm long, 1.25-2 suffused with orange or red at the apex, ovate, acute, attenuate, microscopically erose, 2.5-3.5 mm long, 0.75-1 mm wide; **lip** purple or dark red, thick, narrowly ovate, 2.5-3 mm long, 1 mm wide, the disc convex, shallowly channeled, with the apex acute or narrowly rounded, the base truncate, hinged to the column-foot; **column** semiterete with marginal wings, denticulate or lacerate at the apex, 2 mm long, the foot stout, less than 1 mm long, with the anther deeply hooded and the stigma ventral.

MEXICO: sine loc., *Ehrenberg s.n.* (Holotype: K). **Veracruz**: Jalapa, Mirador, May 1878, *Kienert s.n.* (holotype of *P. crassifolia*: W). **Jalisco**: northeast of Ciudad Guzmán, Cerro e la Ribera, alt. 1700-1900 m, 19 Sept. 1936, *O. Nagel 6338* (AMES, MO). **Guerrero**: south of Chilpancingo, alt. 2100 m, 19 Oct. 1936, *O. Nagel & J. Gonzales 3257* (AMES, MO); near Santa Bárbara, alt. 2040 m, 12 Nov. 1932, *J. Gonzales 1668* (AMES). **Colina**: Barranca Delgado, alt. 800-900 m, Sept. 1934, *O. Nagel 4040* (AMES). **Chiapas**: Chanal, cultivated at UC, 3 Jan. 1961, *R. Alava s.n.* (AMES, HEID, K, MO, UC, US); epiphytic along Las Rosas road, alt. 2000 ft., 8 Dec. 1966, flowered in cultivation, 3 June 1975, *R. McCullough 1776* (SEL), C. Luer illustr. 0188.
GUATEMALA: near Guatemala City, purchased in the market by *M.W. Lewis 26A* (AMES). **Alta Verapaz**: La Choa, Cobán National Park, alt. 200 m, cultivated by H. Ibañez in Cobán, 27 Nov. 1990, *C. Luer 14861* (MO).
COSTA RICA: sine loc., ca. 1867, *A. Endres 48* (W).

This species is distributed in the lowland forests of eastern Mexico and Guatemala, and south into Costa Rica. It is characterized by a shortly creeping rhizome; short ramicauls; and thick, erect leaves that vary from elliptical to narrowly obovate. The inflorescence is shorter than the leaf; the peduncle bears the flower, sometimes followed by a second, or sometimes two flowers simultaneously; the floral bract is minutely glandular; the sepals are glabrous and acute; the petals are acuminate and more or less microscopically erose; and the dark red or purple lip is ovate and thick with a convex surface to either side of a shallow, medial groove.

Panmorphia muricaudata (Luer) Luer, comb. nov.

Bas.: *Pleurothallis muricaudata* Luer, Selbyana 7: 119, 1982.
Ety.: From the Latin *muricaudatus*, "mouse-tailed," referring to the tips of the petals.

Syn.: *Anathallis muricaudata* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 249, 2001.
Syn.: *Specklinia muricaudata* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, petiolate, subacute to obtuse, 10-20 mm long including a petiole 3-8 mm long, 4-7 mm wide, the base cuneate into the petiole. **Inflorescence** a loose, subflexuous, successively several-flowered raceme up to 5 cm long, including the peduncle 1.5-2 cm long, borne laterally from the ramicaul; floral bracts 1-1.5 mm long; pedicels 1.5 mm long; ovary 0.75-1 mm long; **sepals** red-purple, membranous, minutely ciliate-pubescent within, the dorsal sepal ovate, acute, thickened toward the apex, 2.75-3.5 mm long, 1.25-1.75 mm wide, 3-veined, the lateral sepals connate into an elliptical-ovate, obtuse, minutely bifid lamina, 2.75-3.75 mm long, 2-2.25 mm wide, 4-veined, forming a broad mentum with the column-foot; **petals** translucent red-purple, glabrous below the middle, obovate, obtuse, 2.5-3 mm long, 1 mm wide, abruptly contracted into a filiform, pubescent tail 1 mm long; **lip** purple, oblong-subpandurate, ciliate, 1.6-1.75 mm long, 0.6-0.9 mm wide, the apex contracted with decurved margins into an obtuse tip, the disc with a longitudinal pair of calli, tall and in apposition at the base, diverging toward the middle to create a central cavity, reuniting toward the apex, the base bilobulate, hinged to the column-foot; **column** broadly winged above the middle, denticulate at the apex, 1.25 mm long, the anther and the stigma ventral, the foot 0.5 mm long.

ECUADOR: **Pichincha**: cloud forest above Chiriboga, alt, 2000 m, 7 Mar. 1982, *A. Hirtz & A. Leon s.n.* (Holotype: SEL), C. Luer illustr. 7225; between Mindo and Nono, alt. 2200 m, 3 Mar. 1992, *S. Dalström 1602* (MO). **Napo**: new road to Coca north of Archidona, alt. 1200 m, 13 Apr. 1985, *C. Luer, J. Luer & A. Hirtz 11236* (MO). **Morona-Santiago**: between San Juan Bosco and Gualaceo, alt. 1850 m, 28 Mar. 1985, *C. Luer, J. Luer & A. Hirtz 10986* (MO); southeast of Sigsig, alt. 2400 m, 13 Ja, 1989, *C. Luer, J. Luer, A. Hirtz, A. & P. Jeaup 13878* (MO); Chiviasa, east of Limón, alt. 1300 m, 21 Oct. 1999, *A. Hirtz, E. Sánchez & S. Marin 7015* (MO). **Zamora-Chinchipe**: above Valladolid, 21 Feb. 1982, *D. D'Alessandro 169* (SEL), C. Luer illustr. 8078; near Zumba, alt. ca. 1000 m, cultivated at Ecuagenera, Gualaceo, 5 Mar, 2001, *C. Luer 19707* (MO).
COLOMBIA: sine loc., collected by and cultivated by J & L Orchids, Easton, CT, 5 May 1990, *C. Luer 14747* (MO).
BOLIVIA: **La Paz**: Nor Yungas, Alto Yipe, alt. 1700 m, collected Aug. 1991, flowered in cultivation in Quito, Dec. 1991, *A. Hirtz 5704* (MO).
PANAMA: **Chiriquí**: Fortuna dam site, alt. 1100 m, 16 Feb. 1985, *C. Luer, J. Luer, R. & K. Dressler 10577* (MO).

This little, caespitose species, indistinguishable from numerous other, small, similar species, is apparently local but widely distributed from Panama into Bolivia. It is characterized by a lax, flexuous, successively flowered raceme that surpasses the leaves. The sepals are minutely pubescent. The petals are contracted from the middle into a filiform, pubescent tail. The lip is oblong-subpandurate and ciliate with a pair of calli that diverge in the middle to create a central cavity. The edges of the apex of the lip may or may not recurve into a short, tubular tip.

Panmorphia nanifolia (Foldats) Luer, comb. nov.

Bas.: *Pleurothallis nanifolia* Foldats, Bol. Soc. Venez. 22: 258, 1961.

Ety.: From the Latin *nanifolius*, "very small-leaved," referring to the foliage.

Syn.: *Specklinia nanifolia* (Foldats) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant very small, epiphytic, repent, the rhizome up to 10 cm long or longer, forming dense mats, 1.5-2 mm long between ramicauls; roots proportionately thick. Ramicauls stout, reclining to ascending, 1 mm long, enclosed by a tubular sheath. **Leaf** more or less prostrate, overlapping, thickly coriaceous, broadly elliptical to round, obtuse, sessile, 4-9 mm long, 4-7 mm wide, broadly cuneate below into the base. **Inflorescence** a sublax, subsecund, successively 3- to 4-flowered raceme, up to 10 mm long including the peduncle 2-4 mm long, from near the apex of the ramicaul; floral bracts 1 mm long; pedicels 1.5 mm long; ovary 1.25 mm long; **sepals** purple, membranous, slightly thickened toward the apex, glabrous, the dorsal sepal obovate, acute, 3.5-4 mm long, 1.25 mm wide, faintly 3-veined, the lateral sepals free, oblong-ovate, oblique, 3.5 mm long, 1-1.25 mm wide, faintly 3-veined, forming a small mentum with the column-foot; **petals** glabrous, translucent red-purple, elliptical, obtuse, 2.5-3 mm long, 1.5 mm wide, 1-veined; **lip** dark purple, cellular-papillose, narrowly oblong, rounded at the narrow, thickened apex, 2 mm long, 0.5 mm wide, with low, obtuse, lobe-like margins below the middle, the disc shallowly channeled between low, longitudinal calli, the base truncate, minutely bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 1.5 mm long, the foot 0.5 mm long, the anther and stigma hooded and ventral.

VENEZUELA: **Bolívar**: near Río Asa above Raudal Cotua, south of La Paragua, alt. 300 m, 1 Aug. 1960, *J.A. Steyermark 86725* (Holotype: VEN; Isotypes: AMES, NY, US). **Amazonas**: Puerto Ayacucho, near Cataniapo bridge, alt. 120 m, Dec. 1965, *G.C.K. Dunsterville 369*.
ECUADOR: **Morona-Santiago**: collected near Gualaquiza, cultivated at Ecuagenera, flowered in cultivation by Ecuagenera, July 2004, *A. Hirtz 8835* (MO), C. Luer illustr. 20960.
BOLIVIA: **La Paz**: Sud Yungas, Alto Beni, alt. 930 m, 1 Sept. 1991, *C. Luer, J. Luer, R. Vásquez & L. Moreno 15398* (MO). **Santa Cruz**: west of Buena Vista, collected by Luis Moreno, flowered in cultivation by Fred Fuchs, Jr., in Naranja, FL, 1978, *C. Luer 374-S* (SEL); Buena Vista, alt. 390 m, collected and cultivated by D. Ric, flowered in cultivation in Montero, 20 Aug. 1991, *C. Luer 15334* (MO).

Panmorphia nanifolia occurs locally and uncommonly across the Amazon basin from Venezuela to Bolivia. It is characterized by erect, successively few-flowered racemes that rise from mats of minute, round, overlapping leaves. Dunsterville aptly called these tiny, creeping, round-leaved species "confetti-leaved" (see page 191). The sepals are free, and the similar petals are nearly as large. The lip is oblong and shallowly channeled down the middle.

Panmorphia oblanceolata (L.O.Williams) Luer, comb. nov, 2004.

Bas.: *Pleurothallis oblanceolata* L.O.Williams, Bot. Mus. Leafl. 12: 241, 1946.

Ety.: From the Latin *oblanceolatus*, "oblanceolate," referring to the narrowly obovate leaves.

Syn.: *Anathallis oblanceolata* (L.O.Williams) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6: 11, 2003.

Syn.: *Specklinia oblanceolata* (L.O.Williams) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, epiphytic, shortly repent, the rhizome slender, 2-3 mm long between ramicauls; roots slender along the rhizome. Ramicauls suberect, 5-12 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 2-4 cm long including a petiole 0.5-1 cm long, 4-7 mm wide, narrowed below into the petiole. **Inflorescence** a loose, subflexuous, successively 2- to 3-flowered

raceme, up to 10 mm long including the peduncle 5-6 mm long, borne laterally from the ramicaul; floral bracts 1.5-3 mm long; pedicel 1.5-4 mm long; ovary 1.25 mm long; **sepals** amber yellow, glabrous, the dorsal sepal oblong-ovate, acute, 4.5 mm long, 1.3 mm wide, 3-veined, the lateral sepals free, narrowly ovate, curved, carinate, oblique, acute, 4 mm long, 0.75 mm wide, 1-veined; **petals** blackish purple, narrowly ovate, oblique, acute, attenuate, 3 mm long, 0.5 mm wide, 1-veined; **lip** blackish purple, glabrous, narrowly elliptical, obscurely 3-lobed, acute, 2.6 mm long, 0.6 mm wide, the margins erect, obtusely angled (lobed) below the middle , the disc cellular-papillose in the basal fourth, shallowly channeled between a pair of parallel carinae from the base to about the middle, the base bilobulate, hinged to the column-foot; **column** semiterete, long-fringed at the apex, 2 mm long including the fringe, the foot 0.25 mm long, the anther, rostellum and stigma ventral.

MEXICO: **Oaxaca**: valley of Copalita, northwest of Pluma Hidalgo, alt. 1000-1100 m, 1 Sept. 1937, *O. Nagel & Juan Gonzales 6456* (Holotype: AMES), C. Luer illustr. 17183.

This species is known only from the original collection by Otto Nagel in Oaxaca, Mexico. It is distinguished by the slender, shortly repent rhizome, and narrowly obovate leaves. The flowers are produced successively in a short, lax raceme. The free sepals are acute, with the laterals narrower and curved. The petals are narrow and attenuate. The lip is narrowly elliptical, obscurely lobed below the middle, and channeled medially between a pair of calli on the lower half.

Panmorphia pachyphyta (Luer) Luer, comb. nov.

Bas.: *Pleurothallis pachyphyta* Luer, Selbyana 1: 302, 1975.

Ety.: From the Greek *pachyphyton*, "with thick leaves," referring to the leaves.

Syn.: *Anathallis pachyphyta* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 250, 2001.

Syn.: *Specklinia pachyphyta* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, epiphytic, shortly repent, rhizome stout, 3-5 mm long; roots slender, scattered along the rhizome. Ramicauls ascending to erect, stout, 4-5 mm long, enclosed by 2 ribbed, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical to obovate, subacute to obtuse, 2-5 cm long, 1.5-2 cm wide, cuneate below into a subpetiolate base. **Inflorescence** an erect, congested, distichous, successively few-flowered raceme, 3-5 mm long including the peduncle ca. 1 mm long, emerging from the apex of the ramicaul at the base of the leaf; floral bracts scabrous, 2 mm long; pedicels 2-4 mm long; ovary 1.5 mm long; **sepals** orange, fleshy, subcarinate, concave, glabrous, the dorsal sepal obovate, acute, 4-5 mm long, 2 mm wide, 3-veined, the lateral sepals free, ovate, oblique, thickened at the acute tips, 4-5 mm long, 1.5 mm wide; **petals** orange, red at the apex, fleshy, glabrous, ovate, acute, acuminate, 3-3.5 mm long, 1 mm wide; **lip** red, oblong, obtuse, more or less apiculate, obscurely 3-lobed, 2.5-3 mm long, 1 mm wide, the margins with an obtuse angle (lobe) below the middle, coarsely ciliate below the middle, the disc cellular papillose toward the base, shallowly channeled between a pair of low, longitudinal calli below the middle, the base truncate, bilobulate, hinged between to the column-foot; **column** semiterete with marginal wings, denticulate-lacerate at the apex, 2 mm long, the foot stout, 0.5 mm long, with the anther hooded and the stigma ventral.

ECUADOR: **Tungurahua**: in trees between Baños and Puyo, alt. 1500 m, 1974, *F. Fuchs, Jr. s.n.* (Holotype: SEL), C. Luer illustr. 132B. **Azuay**: near Cuenca, 1974, *C.M. Chowning s.n.* (SEL), C. Luer illustr. 132A.
PERU: **Amazonas**: Iquitos, collected by Fred Fuchs, flowered in cultivation 1 Dec. 1975, *C. Luer 1253A* (SEL).

This little species was collected several times in 1974 in Ecuador and Peru, but I know of no other collection. Variable in size vegetatively, it is characterized by a stout, creeping rhizome; thick, obovate leaves borne by short ramicauls; a short, successively few-flowered raceme, and glandular floral bracts. The orange sepals are fleshy, acute, and free above the base; the petals are fleshy and orange with red, acuminate tips; the lip is red, oblong, ciliate below the middle with low, obtuse, marginal lobes, and the base is bilobulate. The pubescent-scurfy floral bracts, similar to those of *Panmorphia lewisiae* (Ames) Luer, distinguish it from is relatives, i.e. *P. polygonoides* (Griseb.) Luer with smooth floral bracts.

Panmorphia polygonoides (Griseb.) Luer, comb. nov.

Bas.: *Pleurothallis polygonoides* Griseb., Fl. Br. W. Ind. Is. 609, 1864.

Ety.: From the Greek *polygonoides*, "like a *Polygonum* L.," a genus in the buckwheat family.

Syn.: *Humboldtia polygonoides* (Griseb.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.

Syn.: *Anathallis polygonoides* (Griseb.) Pridgeon & M.W.Chase, Lindleyana 16: 250, 2001.

Syn.: *Specklinia polygonoides* (Griseb.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, repent, the rhizome 3-9 mm long between ramicauls, enclosed by 2 tubular sheaths; roots produced along the rhizome. Ramicauls stout, suberect, 1-4 mm long, enclosed by a tubular sheath. **Leaf** suberect, coriaceous, elliptical, subsessile, 6-15 mm long, 3-5.5 mm wide, subacute to rounded at the apex, cuneate below into the subpetiolate base. **Inflorescence** an erect, lax, successively 1- to 2-flowered raceme, borne by a suberect peduncle 2-5 mm long, from a node below the base of the leaf; floral bract 1-1.5 mm long; pedicel 1.5-2 mm long; ovary 0.5-1 mm long; **sepals** yellow-green, variously suffused with purple, glabrous, ovate, acute, the dorsal sepal 2.5-3.5 mm long, 0.75-1.5 mm wide, the lateral sepals oblique, free to the base, 2.5-3.5 mm long, 0.75-1.25 mm wide; **petals** colored as the sepals, ovate, acute, 1.75-2.8 mm long, 0.4-1 mm wide; **lip** suffused with purple, or red, oblong-ovate, obtuse, 3-lobed, 1.75-2.5 mm long, 0.75 mm wide, the lateral lobes below the middle, low, erect, obtuse, but sometimes represented by merely a dilated margin, the disc shallowly sulcate between longitudinal calli, the base subtruncate, bilobulate, hinged to the column-foot; **column** stout, semiterete, 1.75 mm long, denticulate-lacerate at the apex, the anther, rostellum and stigma ventral, the foot 0.5 mm long.

TRINIDAD: sine loc., 1877-1880, *A. Fendler 793* (Holotype: K); Arima, 15 Feb. 1846, *Mr. Crueger s.n.* (K); near Arima, *Dr. Bradford s.n.* (BR, W); Cornupia, 22 Mar. 1892, *D.W. Alexander s.n.* (AMES); Cipero Woods, 23 June 1908, *W.E. Broadway 7008* (MO); Toco road, Valencia, 16 Apr. 1920, *N.L. Britton, T.E. Hazen, W. Mendelson 1794* (AMES); Cocoa plantation, base of Mt. Tamana, 18 Apr. 1920, *N.L. Britton, T.E. Hazen, W. Mendelson 1970* (AMES); Mora Forest via Sangre Grande, 11 Aug. 1926, *W.E. Broadway 6383* (K), C. Luer illustr. 19065; Valencia, Toco road, 16 Apr. 1920, *N.L. Britton, T.E. Hazen & W. Mendelson 1794* (AMES, NY); Conupia, 22 Mar. 1892, *D.W. Alexander s.n.* (AMES).
SURINAME: Mt. Goliath, alt. ca. 800 ft., flowered in cultivation in Livonia, MI, 12 July 1990, *R. McCullough SUR-10-86* (MO).
FRENCH GUIANA: Roche Touatou, Bassin de l'Oyapock, alt. 170 m, 17 May 1995, *G. Cremers & J.J. de Granville 13950* (CAY, MO), C. Luer ill. 18676.
VENEZUELA: **Bolívar**: Guatopo, Bejuma-Canoabo road, alt. ca. 2000 ft., Sept. 1961, *G.C.K. Dunsterville 669.*
ECUADOR: **Sucumbíos**: Imuya Cocha on Río Lagarto Cocha, 30 July 1991, *C.H. Dodson, P. Scharff & M. Ryan 18862* (MO). **Napo**: Río Salado, alt. 1300 m, 5 Oct. 1984, *A. Hirtz & A. Andreetta 1945* (MO); east slope of Reventador, alt. 1850 m, 11 Feb. 1986, *C. Luer, J. Luer & A. Hirtz 11774* (MO). **Morona-Santiago**: Cordillera del Condor, east of Los Encuentros, alt. 1000 m, 4 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12613* (MO).8073.
PERU: **Amazonas**: above Pomacochas, 9,000 ft., **K. Tokach P-42** (MO), C. Luer illustr. 17879.

This species found in northern South America and the Andes is superficially similar to the common, widely distributed and variable, *Panmorphia sertularioides* (Sw.) Luer, differing mostly in short, broad leaves, and a shorter inflorescence. The free sepals are not remarkably different, but the petals are more or less wider. The lips have the classical midline callus and basal lobules.

Panmorphia rabei (Foldats) Luer, comb. nov.

Bas.: *Pleurothallis rabei* Foldats, Acta. Bot. Venez. 3: 387, 1968.

Ety.: Named in honor of the co-collector M. Rabe.

Syn.: *Specklinia rabei* (Foldats) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 0.5-2 cm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, elliptical-obovate, subacute to obtuse, 2-4 cm long, 1-1.5 cm wide, gradually narrowed below into a petiole 0.5-1 cm long. **Inflorescence** a subflexuous, successively few-flowered raceme up to 2 cm long including the peduncle 0.5 cm long, from a node near the apex of the ramicaul; floral bract 1.5-3 mm long; pedicel 2-3 mm long; ovary 1.5-2 mm long; **sepals** usually purple, variously ciliate and pubescent, subcarinate, the dorsal sepal elliptical, acute, 3-6.5 mm long, 1-2.5 mm wide, 3-veined, the lateral sepals connate only at the base, ovate-triangular, oblique, acute, 2.75-6.5 mm long, 1-2 mm wide, 3-veined; **petals** purple, elliptical-ovate, acute, ciliate-pubescent, 2-5 mm

long, 0.5-1 mm wide, 1-veined; **lip** dark red-purple, oblong-trilobed, 1.5 mm long, 0.5-0.75 mm wide, with the apex obtuse, the lateral lobes of varying sizes and shapes, erect, near the middle, minutely ciliate or fringed, the disc slightly thickened, the base subtruncate, bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 1.5-2 mm long, with the anther, rostellum and stigma hooded and ventral.

VENEZUELA: **Trujillo**: between Urbina and San Rafael, alt. 2300-2500 m, *J.A. Steyermark & M. Rabe 97263* (Holotype: VEN). **Dist. Fed.**: 26 May 1963, *J.A. Steyermark 91449* (AMES, VEN). Colonia Tovar, Mar. 1956, *G.C.K. Dunsterville*
COLOMBIA: moist forest above Pacho, alt. 1900-2400 m, Feb. 1892, *F.C. Lehmann s.n.* HK-140 (K). **Caqueta**: beyond La Tagua, alt. 200 m, 21 May 1956, *S. Vogel 102* (AMES).
ECUADOR: **Zamora-Chinchipe**: above Valladolid, alt. 2200 m, 19 May 1986, *D. D'Alessandro 682* (MO).
PERU: **Amazonas**: Bongara, road to Pomacochas, above Puente Ingenio, alt. 2200 m, 7 Oct. 1964, cultivated at UC, 21 Nov. 1966, *P.C. Hutchison & J.K. Wright 6883* (AMES), C. Luer illustr. 19295.

This widely distributed species is noteworthy for the extreme variability of size, color, pubescence, and lobes of the lip. A common variation was described by Foldats as *Pleurothallis rabei* [=*Panmorphia rabei*]. Because of a misidentification, *P. rabei* was erroneously known for many years as *Pleurothallis breviscapa* C.Schweinf. [=*Panmorphia rabei*], a similar but distinctly different species. *Panmorphia rabei* is distinguished by a ramicaul shorter than the leaf, and a short, few-flowered raceme. The sepals and petals are variously ciliate and pubescent. The lip is oblong and trilobed with lateral lobes of various sizes below but near the middle. An extremely large, similar species with a seven-veined dorsal sepal instead of three-veined, and with long, narrow, ciliate lateral lobes of the lip is recognized as *Panmorphia dalessandroi* (Luer) Luer. An even vegetatively larger species with only three-veined sepals and markedly reduced lobes of the lip is recognized as *Panmorphia sanchezii* (Luer & Hirtz) Luer.

Panmorphia reptilis (Luer & Dalström) Luer, comb. nov.

Bas.: *Pleurothallis reptilis* Luer & Dalström, Lindleyana 11: 183, 1996.

Ety.: From the Latin *reptilis*, "creeping," referring to the habit.

Syn.: *Specklinia reptilis* (Luer & Dalström) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, long-repent, up to 8-10 cm long, the rhizome 3 mm long between ramicauls, enclosed by 2 tubular sheaths; roots comparatively thick, produced along the rhizome. Ramicauls stout, suberect, 1 mm long, enclosed by a tubular sheath. **Leaf** erect, coriaceous, broadly elliptical to subcircular, subsessile, 6-9 mm long, 4-5,5 mm wide, obtuse to rounded at the apex, notched, the rounded below and contracted at the base. **Inflorescence** racemose, the peduncle erect, 1 mm long, bearing a single flower, often followed by a second; floral bract infundibular, 1.5 mm long; pedicel 3 mm long; ovary 1 mm long; **sepals** brownish yellow, glabrous, carinate, the dorsal sepal ovate, acute, 4,5 mm long, 1.6 mm wide, 3-veined, the lateral sepals connate only at the base, falcate-ovate, acute, 4 mm long, 1.5 mm wide, 3-veined; **petals** narrowly falcate-ovate, acute, 2.5 mm long, 0.5 mm wide, 1-veined; **lip** purple, cellular-glandular, ovate, acute, 3-lobed, 3 mm long, 1-1.5 mm wide, the lateral lobes below the middle, erect, minutely erose, the disc longitudinally bicarinate, the carinae tallest near the middle, the base subtruncate, bilobulate, hinged to the column-foot; **column** stout, semiterete, 2.5 mm long, denticulate at the apex, anther, rostellum and stigma hooded and ventral, the foot concave.

ECUADOR: **Zamora-Chinchipe**; Cordillera del Condor, east of Los Encuentros, wet forest, alt. 1650 m, 13 Feb. 1993, *S. Dalström, T. Höijer & H. Wanntorp 1909* (Holotype: MO), C. Luer illustr. 16610.

Vegetatively, this little, creeping species is similar to the other repent species of this genus, i.e. *Panmorphia angulosa* (Luer & Hirtz) Luer and *P. polygonoides* (Griseb.) Luer. It is distinguished from all of them by the broadly elliptical, subsessile leaves and a one-millimeter-long peduncle emerging from below the apex of the ramicaul, and that bears one flower, but sometimes followed by a second. The sepals are not remarkably different, but the acute petals are subfalcate, and the bicarinate lip is three-lobed with the lobes erose, erect, and antrorse.

Panmorphia ricii (Luer & Vásquez) Luer, comb. nov.

Bas.: *Pleurothallis ricii* Luer & Vásquez, Rev. Soc. Bol. Bot. 1(2): 14, 1997.

Ety.: Named in honor of Darwin Ric of Montero, Bolivia, co-collector of this species.

Syn.: *Specklinia ricii* (Luer & Vásquez) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 1.5-3 cm long, enclosed by 3 thin, tubular sheaths with red, veinlike ribs. **Leaf** erect, coriaceous, narrowly elliptical, acute, 30-45 mm long, 5-8 mm wide, narrowly cuneate below into a petiole ca. 1 mm long. **Inflorescence** a subdense, successively 3- to 4-flowered raceme up to 15 mm long including the filiform peduncle 5-10 mm long; floral bract thin, 1.5 mm long; pedicel 1.5 mm long; ovary 1 mm long; **sepals** yellow, fleshy, glabrous, the dorsal sepal ovate, acute, 3.25 mm long, 1.75 mm wide, the lateral sepals free, suffused with brown, ovate, oblique, acute, 2.75 mm long, 1 mm wide; **petals** yellow, ovate-triangular, ciliate, 2.25 mm long, 1 mm wide, the apex acute, cellular-glandular; **lip** yellow with a brown, central stripe, oblong, ciliate, 2 mm long, 0.75 mm wide, the apex rounded, the margins more or less incurved below the middle, the disc with a pair of low, longitudinal calli, base subtruncate, hinged to the column-foot; **column** semiterete, 1.5 mm long, shallowly winged, obtusely angled at the apex, the foot thick, 1 mm long.

BOLIVIA: **Cochabamba**: epiphytic in seasonally dry forest, Bulo-bulo, alt. 300 m, west of Yapacaní, 22 Aug. 1991, *C. Luer, J. Luer, R. Vásquez & D. Ric 15341* (Holotype: MO).

This little species from a lowland, seasonally dry forest in Bolivia is characterized by the narrowly elliptical leaf borne by an equally long ramicaul with red-veined sheaths. The inflorescence is a short, successively 3- to 4-flowered raceme. The small sepals and petals spread widely to expose the comparatively large, oblong, ciliate lip with a pair of longitudinal calli. The petals are ciliate and cellular-glandular at the acute apex.

Panmorphia sanchezii (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis sanchezii* Luer & Hirtz, Selbyana 23: 36, 2002.

Ety.: Named in honor of Dr. Eduardo Sánchez of Cuenca, Ecuador, co-collector of this species.

Syn.: *Specklinia sanchezii* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant large for the genus *Panmorphia*, epiphytic, caespitose; roots slender. Ramicauls erect, 2-3 cm long, enclosed by 3, loose, imbricating, tubular sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 6-9 cm long including a petiole 1-1.5 cm long, 1.5-2 cm wide, cuneate below into the petiole. **Inflorescence** a congested, successively few-flowered raceme ca. 3 mm long, borne by a peduncle ca. 1 mm long, from a node 4 mm below the apex of the ramicaul (abscission layer); floral bract 1.5-2 mm long; pedicel 2-2.5 mm long; ovary triquetrous, 1.5 mm long; **sepals** red-brown, white toward the base, minutely ciliate, carinate, the dorsal sepal ovate, acute, 8 mm long, 2.5 mm wide, 3-veined, the lateral sepals narrowly ovate, acute, 8 mm long, 2 mm wide, connate 0.5 mm, 3-veined; **petals** dark purple, narrowly elliptic-oblong, subacute, ciliate-pubescent, 4.5 mm long, 1 mm wide, 1-veined; **lip** dark purple, oblong-pyriform, 2.25 mm long, 1.1 mm wide, with the apex rounded, the lateral lobes low, broadly rounded, marginal, below the middle, the disc densely glandular-pubescent above the base, the base subtruncate, bilobulate, hinged to the column-foot; **column** winged above the middle, denticulate at the apex, 2 mm long, with the anther, rostellum and stigma hooded and ventral.

ECUADOR: **Zamora-Chinchipe**: between Limón and Río Zamora, along Río Yanguza, alt. 1200 m, 22 Oct. 1999, *A. Hirtz, E. Sánchez & S. Marin 7053* (Holotype: MO), C. Luer illustr. 19355.

This species is most similar to *Panmorphia dalessandroi* (Luer) Luer, with which it is also endemic in southern Ecuador. Both species are related to the smaller, common, *P. rabei* (Foldats) Luer, but distinguished by habits larger than other related species of the genus. From *P. dalessandroi*, *P. sanchezii* is distinguished by larger leaves, but smaller flowers with the sepals only three-veined instead of seven-veined. The petals are oblong and subacute, and the lip is obovate with lateral lobes low and broadly obtuse. The base of the lip is densely glandular-pubescent.

Panmorphia seriata (Lindl.) Luer, comb. nov.

Bas.: *Pleurothallis seriata* Lindl., Edwards's Bot. Reg. 29: Misc. 75, 1840.
Ety.: From the Latin *seriatus,* "in rows," referring to the flowers in the raceme.

Syn.: *Humboldtia seriata* (Lindl.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.

Syn.: *Pleurothallis sphaeroglossa* Hoehne, Arquiv. Bot. Estad. São Paulo 1: 11, 1938.
Ety.: From the Greek *sphaeroglossa*, "spheroid tongue," referring to the apex of the labellum.

Syn.: *Pleurothallis diffusiflora* C.Schweinf,. Bot. Mus. Leafl.,
Ety.: From the Latin *diffusiflorus*, "diffusely flowered," referring to the inflorescence.

Syn.: *Specklinia seriata* (Lindl.) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 5-15 mm long, enclosed by 2 ribbed, tubular sheaths. **Leaf** erect, coriaceous, sometimes spotted with purple, petiolate, 20-50 mm long including the petiole 10-15 mm long, the blade elliptical-obovate, obtuse to rounded at the apex, 8-12 mm wide, cuneate below into the petiole. **Inflorescence** a suberect, loose, flexuous, flexible, successively many-flowered raceme, 5-15 cm long including the peduncle 3-6 cm long, produced laterally from the ramicaul; floral bracts 1.5-2 mm long; pedicel 4-6 mm long; ovary 3 mm long; **sepals** yellow-green, more or less veined or dotted with purple externally, glabrous, subcarinate, the dorsal sepal obovate, obtuse, concave below the middle, 6-7 mm long, 2.5 mm wide, 3-veined, the lateral sepals connate to near the apex into an elliptical-obovoid, bifid, bicarinate synsepal, forming a small mentum below the tip of the column-foot, 6-7 mm long, 3.5-4 mm wide, 6-veined, the apices obtuse; **petals** mottled with purple, spathulate, broadly obtuse with minutely denticulate-erose margins, 2.5-3 mm long, 1.5-2 mm wide, 1-veined, minutely verrucose both internally and externally; **lip** bright purple to purple-black, oblong, trilobed, 3-4 mm long, 1-1.5 mm wide, with the apical half thickened, bulbous and rounded at the apex, minutely spiculate beneath, the lobes in the lower third, thin, erect, uncinate, the disc shallowly channeled between converging calli from the bases of the lobes to near the middle, with an ovoid cavity near the center, the base subtruncate, minutely biauriculate, hinged to the column-foot; **column** semiterete, 2 mm long, with a pair of apical teeth, the anther, rostellum and stigma ventral, the foot 1 mm long.

BRAZIL: **Rio de Janeiro**: sine loc., received by the Royal Horticultural Society, cultivated by *John Hearne, Esq. s.n.* (Holotype: K); Macaé de Cima Reserve, alt. 1380-1500 m, cultivated by David Miller, 22 Sept. 1996, *C. Luer 18018* (MO). **Espirito Santo**: near Domingos Martens, cultivated by R. Kautsky, 26 Sept. 1996, *C. Luer 18035* (MO). **Paraná**: Matinhos do Paraná, cultivated at Orquidário do Estado de São Paulo, 22 Apr. 1937, *Servico do Botanica e Agronomia 37,999* (holotype of *P. sphaeroglossa*: SP).
GUYANA: Essequibo River, Moraballi Creek, near Bartica, near sea-level, 7 Oct. 1929, *N.Y. Sandwith 474* (holotype of *P. diffusiflora*: K); 1898, *E.F. im Thurn 116* (K): Barima-Barama road, Camp No. 6, *E.F. im Thurn 172* (K).
SURINAME: Zeldzaam, *Orchids of Suriname* by Marga C.M. Werkhoven, page 210, 1986.
VENEZUELA: **Bolívar**: Altiplanicie de Nuria, alt. 600-700 m, June 1975, *G.C.K. Dunsterville 1339.*

This species, without obvious relatives, is relatively frequent in the mountains of southeastern Brazil, but it also occurs infrequently in northern, coastal South America in Venezuela, Guyana, and Suriname. Until future DNA analyses, the relationships of this species will remain unclear.

Panmorphia seriata (Lindl.) Luer is characterized by a ramicaul shorter than the leaf which is surpassed by a long, loose, flexuous raceme of distinctive flowers. The sepals are obtuse with the laterals connate to near their apices. The petals are broadly spathulate with the margins minutely erose and the surfaces minutely verrucose. The apex of the lip is thick, spheroid, and minutely spiculate beneath; above the base is a pair of small, erect, uncinate lobes; and in the center of the disc is an ovoid cavity.

Panmorphia sertularioides (Sw.) Luer, comb. nov.

Bas.: *Epidendrum sertularioides* Sw., Prodr. 122, 1788.
Ety.: Named for the similarity of the species to a species of fern of the genus *Sertularia.*

Syn.: *Dendrobium sertularioides* (Sw.) Sw., Fl. Ind. Occ. 3: 1541, 1806.
Syn.: *Pleurothallis sertularioides* (Sw.) Spreng., Syst. Veg. 3: 721, 1826.
Syn.: *Specklinia sertularioides* (Sw.) Lindl., Gen. Sp. Orch. 8, 1830.

Syn.: *Pleurothallis tenuissima* Rchb.f., Linnaea 13: 339, 1844.
Ety.: From the Latin *tenuissimus*, "very thin," referring to the vegetative parts.

Syn.: *Pleurothallis trichopoda* A.Rich. & Galeotti, Ann. Sci. Nat. ser. 3(3): 17, 1845.
Ety.: From the Greek *trichopodion*, "a hair-like foot," referring to the ramicaul.

Syn.: *Humboldtia sertularioides* (Sw.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.
Syn.: *Humboldtia tenuissima* (Rchb.f.) Kuntze, Rev. Gen. Pl. 2: 668, 1891.
Syn.: *Humboldtia trichopoda* (A.Rich. & Galeotti) Kuntze, Rev. Gen. Pl. 2: 668, 1891.

Syn.: *Anathallis sertularioides* (Sw.) Pridgeon & M.W.Chase, Lindleyana 16: 250, 2001.

Plant small, epiphytic, long-repent, up to 10 cm long or more, the rhizome 3-9 mm long between ramicauls, enclosed by 2 tubular sheaths; roots produced along the rhizome. Ramicauls stout, suberect, 1-4 mm long, enclosed by a tubular sheath. **Leaf** suberect, coriaceous, narrowly elliptic-obovate, subsessile, 10-40 mm long, 3-5 mm wide, subacute to rounded at the apex, cuneate below into the subpetiolate base. **Inflorescence** an erect, lax, successively 2- to 3-flowered raceme, occasionally 1-flowered, borne by an erect peduncle 3-10 mm long, from a node below the base of the leaf; floral bract 1-1.5 mm long; pedicel 3-5 mm long; ovary 1.5-2 mm long; **sepals** yellow to yellow-green, orange or yellow at thickened apices, glabrous, ovate, acute, the dorsal sepal 3.5-5 mm long, 1.25-1.5 mm wide, the lateral sepals oblique, free to the base, 3.5-5 mm long, 1-1.25 mm wide; **petals** yellow, sometimes red at the tip, glabrous, narrowly subfalcate-ovate, acute, 2.8-4 mm long, 0.5-1 mm wide; **lip** green to yellow or purple, more or less cellular-glandular, oblong-ovate, obscurely 3-lobed, narrowly obtuse at the apex, 1.75-3 mm long, 0.5-1 mm wide, the lateral lobes (marginal angles) below the middle, low, erect, obtuse, the disc shallowly sulcate between longitudinal calli, the base subtruncate with a minute lobule at each corner, hinged to the column-foot; **column** stout, semiterete, 1.5-2 mm long, denticulate-lacerate at the apex, the anther, rostellum and stigma hooded and ventral, the foot concave.

Representative collections:
JAMAICA: sine loc., *O. Swartz* (Holotype: S; Isotypes: BM, C, M, W); Beaufort, *Wullschlaegel 1084* (W); near Mabess River, alt. 4,000 ft., 22 Nov. 1900, *W. Harris s.n.* (BM, K); Newmarket, 13-22 Sept. 1907, *N.L. Britton 1554* (NY, US); Hollymount, 19 Sept. 1906, *N.L. Britton 776* (AMES, NY). **Portland**: John Crow Mts., Hog House Hill, alt. 1500 m, 17 Mar. 1977, *A.C. Podzorski 35* (K). **St. Thomas**: East of Morant River, alt. 500-700 m, 26 June 1966, *G.R. Proctor 27522* (AMES).
MEXICO: **Vera Cruz**: Mirador, alt. 3,000 ft., 1840, *H. Galeotti 5166* (holotype of *P. trichopoda*: W; isotypes: AMES, BR), C. Luer illustr. 19381; near mirador, Mar. 1842, *F.M. Liebmann 7321* (orchid nr. 228) (C); near Mirador, alt. 3,000-3,800 ft., *E. Hohenacker s.n.* (W); near Zacuapan, alt. 900 m, 20 Aug. 1933, *O. Nagel 2654* (AMES). **Oaxaca**: Cuicatlán, Finca Union Francesa, alt. 350-450 m, 28 June 1939, *R. Schultes 725* (AMES). **Chiapas**: Ococingo, south of Frontera Corozal, above Río Usumacinta, alt. 120 m, 29 May 1985, *E. Martínez S. 12343* (MEXU, MO). Sine loc., *F.E. Leibold 620* (holotype of *P. tenuissima*: W), C. Luer illustr. 19064.
GUATEMALA: **Izabal**: shores of Lago Izabal, alt. 50 m, 19 Apr. 1940, *J.A. Steyermark 39678* (AMES, F). **Petén**: between Cerro Ceibal and Ceibal, alt. 50 m, 1 May 1942, *J.A. Steyermark 46175* (AMES).
BELIZE: Toledo: near Jancito Creek, Punta Gorda-San Antonio Road, *P.H. Gentle 4974* (AMES); Maya Mountains, Bladen Nature Reserve, southwest of Ek Xux ruin, alt. 300 m, 21 May 1996, *B.K. Holst & G. Davidse 5466* (MO).
HONDURAS: vicinity of Truxillo, Copete Farm, alt. 150 ft., 14 Mar. 1923, *O. Ames II 189* (AMES). Guimars, alt. 50 ft., 17 Mar. 1925, *O. Ames II 221* (AMES). **Atlántida**: Lancetilla Valley, near Tela, alt. 20-600 m, 6 Dec. 1928, *P.C. Standley 52796, 54350* (AMES). (SEL).
NICARAGUA: **Granada**: Volcán Mombacho, alt. 550 m, *A.H. Heller 7458* (SEL). **Matagalpa**: Nepple, 1974, *C. Luer 140* (SEL).
COSTA RICA: above Santa Maria, along path to the savanna de los Guanados, ca. 1867, *A. Endres 45, sketch 551* (illustr. at W). **Guanacaste**: Vicinity of Tilarán, alt. 500-650 m, 10-31 Jan. 1926, *P.C. Standley & J. Valerio 45003* (AMES).
PANAMA: **Chiruquí**: San Vicente, 12 Sept. 1976, *C. Luer & H. Butcher 1253* (SEL).
CUBA: Oriente: Sept. 1859-Jan. 1860, *C. Wright 1609* (AMES, BM, BR, HAC, K, NY, W); Feb. 1865, *C. Wright 3347* (AMES, BM, BREM, HAC, K, MO, W); crest of Sierra Maestra, alt. 1300-1500 m, 23 Jan. 1956, *C.V. Morton 9450* (BM, US). **Holguín**: Sierra Nipe, near Woodfred, alt. 450-550 m, 5 Dec. 1909, *J.A. Schafer 3036* (AMES, K, NY); crest of Sierra Nipe, alt. 600-700 m, 16-17 Oct. 1941, *C.V. Morton & J. Acuña 3180* (AMES, HAC, K, NY, US); Sierra de Nipe, Río Piloto, alt. 350 m, 3 Oct. 1919, *E.L. Ekman 9787* (AMES, NY, S); Moa, La Melba, alt. 500 m, 27 Dec. 1968, *J. Bisse & H. Lippold 11283* (JE). **Pinar del Rio**: Baños San Vicente, 12-16 Sept. 1910, *N.L. Britton, E.G. Britton, C.S. Gager 7318* (AMES, K, NY): Pena Blanca Mountain 5 Apr. 1925, *J.T. Roig 3563* (NY); La Palma, norte del Pan de Guajaibón, alt. 200-500 m, 2 Nov. 1975, *A. Areces, J. Bisse, H. Dietrich et al. 29070* (JE). **Las Villas**: south of Cumanayagua, 5 July 1953, *R.L. Dressler 1312* (MO, US). **Santa Clara**: Trinidad Mountains, Hanabanilla Falls, 1 Mar. 1910, *N.L. Britton et al. 4862* (AMES, NY). **Granma**: Bartolomé Masó, Santo Domingo, alt. 1300 m, 26 Apr. 1979, *J. Bisse et al. s.n.* (HAJB).
VENEZUELA: Guatopo, Bejuma-Canoabo road, alt. ca. 2,000 ft., Sept. 1961, *G.C.K. Dunsterville 669.*
BRAZIL: **Pará**: Altamira, 10 Mar. 1983, *A. Seidel 1332* (HB).
ECUADOR: **Zamora Chinchipe**: Cordillera del Condor, alt. 1300 m, *C. Luer 13473* (MO, QCNE).
BOLIVIA: sine loc., *R. Vásquez 1364* (MO), C. Luer illustr 16391 (MO).

This species is frequent and widely distributed in tropical America at low altitudes from Mexico through Central America, the Antilles, and south America from the Guyanas to Bolivia, and, as expected, considerable variations are found. It is characterized by the small size, a long-repent rhizome, and suberect to erect, narrow leaves borne by abbreviated ramicauls. One to three flowers are produced successively and distantly by a slender peduncle. The sepals are acute and free; the petals are shorter, acute and glabrous; and the lip is oblong with a narrowly obtuse apex, a pair of obtuse, marginal angles below the middle, and a pair of minute lobules at the base.

Panmorphia steinbuchiae (Carnevali & G.A.Romero) Luer, comb. nov.

Bas.: *Pleurothallis steinbuchiae* Carnevali & G.A.Romero, Novon 4: 90, 1994.

Ety.: Named in honor of Edith Steinbuch of Caracas, Venezuela, co-collector of the species.

Syn.: *Pleurothallis hilariana* Carnevali & G.A.Romero, Orch. Venez. ed. 2, 3: 1143, 2000

Ety.: Named for Hilary Branch, who collected this species.

Syn.: *Specklinia steinbuchiae* (Carnevali & G.A.Romero) Luer, Monogr. Syst. Bot. Gard. 95: 264, 2004.

Plant small, epiphytic, shortly repent, rhizome 1-2 mm long between ramicauls; roots slender, scattered along the rhizome. Ramicauls ascending, 1-2 mm long, enclosed by a thin, tubular sheath. **Leaf** suberect, coriaceous, broadly elliptical, often overlapping, subacute to obtuse, 3.5-8 mm long, 2.5-3.25 mm wide, cuneate below into a subpetiolate base. **Inflorescence** a loose raceme of 2-3 successive flowers, 2-3 mm long, borne by a slender peduncle 3-9 mm long, from the apex of the ramicaul at the base of the leaf; floral bracts 1 mm long; pedicels 0.75 mm long; ovary 0.6 mm long; **sepals** glabrous, membranous, the dorsal sepal narrowly oblong-ovate, acute, convex, 3.5-4 mm long, 1.2-1.5 mm wide, faintly 3-veined, the lateral sepals connate into an ovate, convex, shortly bifid lamina, 3-4 mm long, 2-2.5 mm wide, 4-veined; **petals** glabrous, translucent, oblong, obtuse, 1.5-2 mm long, 0.8 mm wide, 1-veined, microscopically irregular toward the apex; **lip** oblong, minutely ciliate, obtuse to narrowly obtuse at the apex, 2-6-3.25 mm long, 0.6-0.8 mm wide, the disc shallowly channeled centrally, the base truncate with a lobule at each corner, hinged to the column-foot; **column** semiterete, narrowly winged, 1.5 mm long, the foot stout, ca. 0.75 mm long, with the anther shortly hooded and the stigma ventral.

VENEZUELA: **Bolívar**: Cerro Guaiquinima, collected by Gustavo Santana and Edith Steinbuch, date unknown, *G. Carnevali 2957* (Holotype: VEN), C. Luer illustr. 16326; west flank of Ilu-tepui, alt. 1000 m, Jan. 1979, collected by H. Branch, *G.C.K. Dunsterville 1405* (holotype of *Pleurothallis hilariana*: AMES); same collection data, *G.C.K. Dunsterville 1405A* (AMES), C. Luer illustr. 19179.

This small species is closely related to *Panmorphia barbulata* (Lindl.) Luer, but it is distinguished from the latter by small, broadly elliptical to round, more or less overlapping leaves that are borne by a shortly repent rhizome, and that are surpassed by a distantly, and successively two- to three-flowered raceme. The dorsal sepal is free, narrow and acute; the synsepal is shortly bifid; the petals are oblong, obtuse and glabrous; and the lip is narrowly oblong, narrowly obtuse or subacute, minutely ciliate, and shallowly channeled centrally. The base is bilobulate.

Two speminens (*Dunsterville 1405* and *1405A*) were made in a locality near that of the collection described as *Pleurothallis steinbuchiae* [=*Panmorphia steinbuchiae*], *Dunsterville 1405* being cited as the type of *Pleurothallis hilariana*. *Dunsterville 1405A*, C.Luer illustr. 19179, shows only slight variations in the leaves and the labellum. *Pleurothallis hilariana* was distinguished by "an acute, shorter, proportionately narrower labellum." The lips of both concepts are ciliate, that of *P. hilariana* having more cilia.

New combinations of *Panmorphia* from Brazil

Panmorphia adenochila (Loefgr.) Luer, comb. nov.
Bas.: *Pleurothallis adenochila* Loefgr., Arch. Jard. Bot. Rio de Janeiro 2: 55, 1918.

Panmorphia ciliolata (Schltr.) Luer, comb. nov.
Bas.: *Pleurothallis ciliolata* Schltr., Repert. Spec. Nov. Regni Veg. 23: 36, 1926.

Panmorphia corticicola (Schltr. ex Hoehne) Luer, comb. nov.
Bas.: *Pleurothallis corticicola* Schltr. ex Hoehne, Bol. Mus. Nac. Rio de Janeiro 12(2): 18, 1936.

Panmorphia fastigiata (Luer & Toscano) Luer, comb. nov.
Bas.: *Pleurothallis fastigiata* Luer & Toscano, Selbyana 23(2): 186, 2002.

Panmorphia gehrtii (Hoehne & Schltr.) Luer, comb. nov.
Bas.: **Pleurothallis gehrtii** Hoehne & Schltr., Archiv. Bot. Est. São Paulo 1(3): 214, 1926.

Panmorphia githaginea (Pabst & Garay) Luer, comb. nov.
Bas.: *Pleurothallis githaginea* Pabst & Garay, Arquiv. Jard. Bot. Rio de Janeiro 14: 12, 1956.

Panmorphia helmutii (Hoehne) Luer, comb. nov.
Bas.: *Pleurothallis helmutii* Hoehne, Arquiv. Bot. Est. São Paulo 2(2): 21, 1946.

Panmorphia kautskyi (Pabst) Luer, comb. nov.
Bas.: *Pleurothallis kautskyi* Pabst, Bradea 1: 330, 1975.

Panmorphia kleinii (Pabst) Luer, comb. nov.
Bas.: *Pleurothallis kleinii* Pabst, Bradea 1: 179, 1972.

Panmorphia laciniata (Barb.Rodr.) Luer, comb. nov.
Bas.: *Pleurothallis laciniata* Barb.Rodr., Gen. Sp. Orch. 1: 14, 1977.

Panmorphia lichenophila (C.Porto & Brade) Luer, comb. nov.
Bas.: *Pleurothallis lichenophila* C. Porto & Brade, Arquiv. Inst. Veg. Rio de Janeiro 1: 221, 1935.

Panmorphia limbata (Cogn.) Luer, comb. nov.
Bas. *Pleurothallis limbata* Cogn., Fl. Bras. 3(4): 485, 1896, replaced name for *Lepanthes marginata* Bar.Rodr.

Panmorphia lobiserrata (Barb.Rodr.) Luer, comb. nov.
Bas.: *Lepanthes lobiserrata* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 63, 1882, as *lobisserrata*.

Panmorphia microblephara (Schltr.) Luer, comb. nov.
Bas.:*Pleurothallis microblephara* Schltr., Notizbl. Bot. Gart. Berlin 7: 273, 1918.

Panmorphia microphyta (Barb.Rodr.) Luer, comb. nov.
Bas.: *Lepanthes microphyta* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 67, 1882.

Panmorphia paranaënsis (Schltr.) Luer, comb. nov.
Bas.: *Pleurothallis paranaënsis* Schltr., Notizbl. Bot. Gart. 7 Mus. Berl.-Dahl. 66(7): 274. 1918.

Panmorphia paranapiacabensis (Hoehne) Luer, comb. nov.
Bas.: *Pleurothallis paranapiacabensis* Hoehne, Arquiv. Bot. Est. São Paulo 1: 14, 1938.

Panmorphia peroupavae (Hoehne & Brade) Luer, comb. nov.
Bas.: *Pleurothallis peroupavae* Hoehne & Brade, Bol. Mus. Nac. Rio de Janeiro 12(2): 15, 1936.

Panmorphia petropolitana (Hoehne) Luer, comb. nov.
Bas.: *Pleurothallis petropolitana* Hoehne, Archiv. Inst. Biol. São Paulo 3: 296, 1930.

Panmorphia recurvipetala (Barb.Rodr.) Luer, comb. nov.
Bas.: *Lepanthes recurvipetala* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 62: 1882.

Panmorphia reedii (Luer & Toscano) Luer, comb. nov.
Bas.: *Pleurothallis reedii* Luer & Toscano, Selbyana 23(2): 186, 2002.

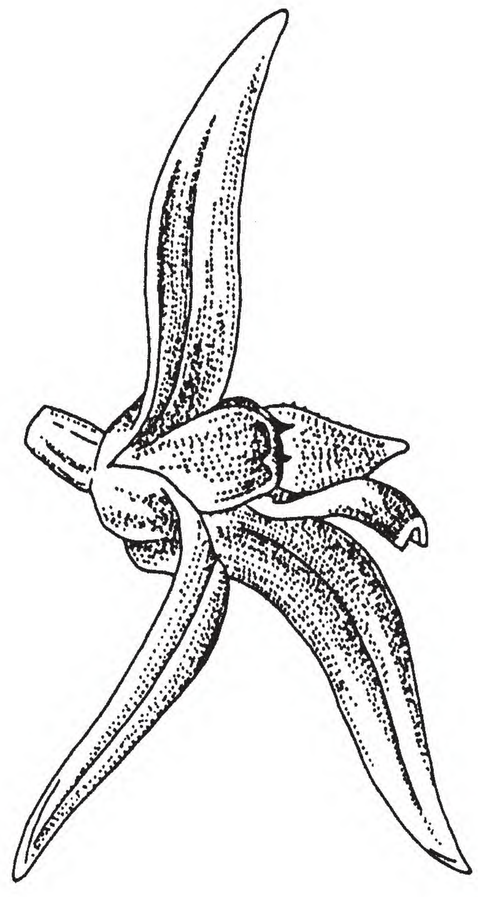
Panmorphia rubrolimbata (Hoehne) Luer, comb. nov.
Bas.: *Pleurothallis rubrolimbata* Hoehne, Arquiv. Bot. Est. São Paulo 2: 22, 1946.

Panmorphia rudolfii (Pabst) Luer, comb. nov.
Bas.: *Pleurothallis rudolfii* Pabst, Arquiv. Jard. Bot. Rio de Janeiro 14: 19, 1956.

Panmorphia tigridens (Loefgr.) Luer, comb. nov.
Bas.: *Pleurothallis tigridens* Loefgr., Arch. Jard. Bot. Rio de Janeiro 2: 56, 1918.

Panmorphia vitorinoi (Luer & Toscano) Luer, comb. nov.
Bas.: *Pleurothallis vitorinoi* Luer & Toscano, Selbyana 23(2): 195, 2002.

Panmorphia welteri (Pabst) Luer, comb. nov.
Bas.: *Pleurothallis welteri* Pabst, An. XIV Congr. Soc. Bot. Brasil 15, 1964.



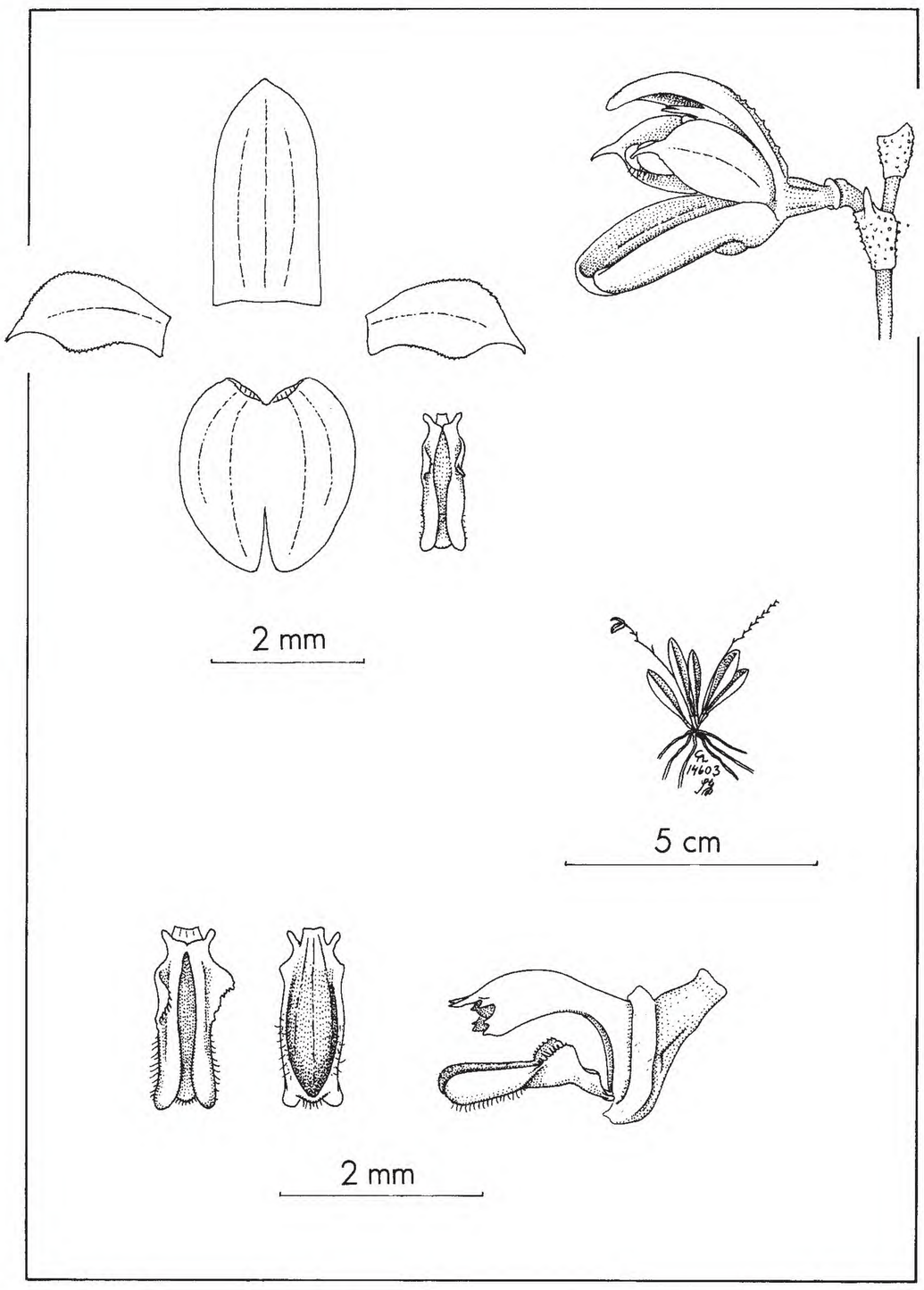


Fig. 100. Panmorphia abbreviata

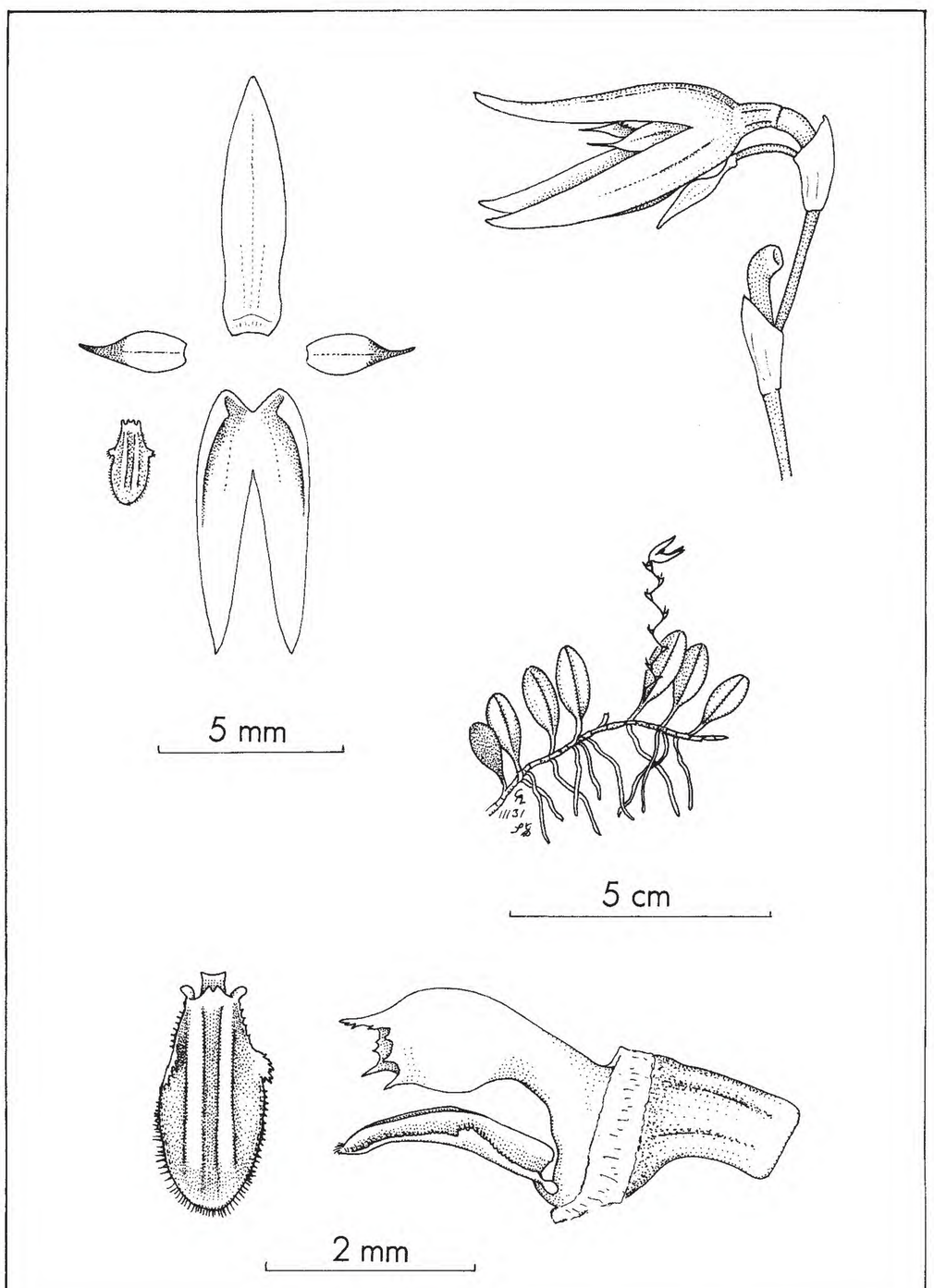


Fig. 101. Panmorphia angulosa

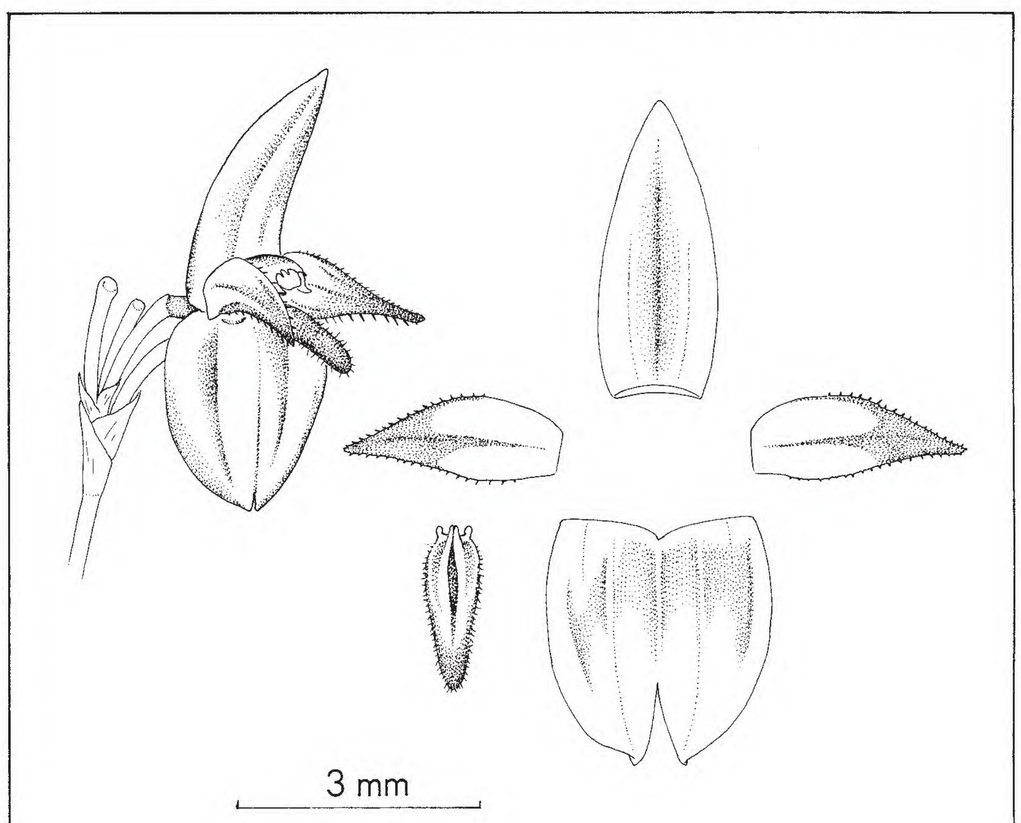


Fig. 102a. Panmorphia barbulata

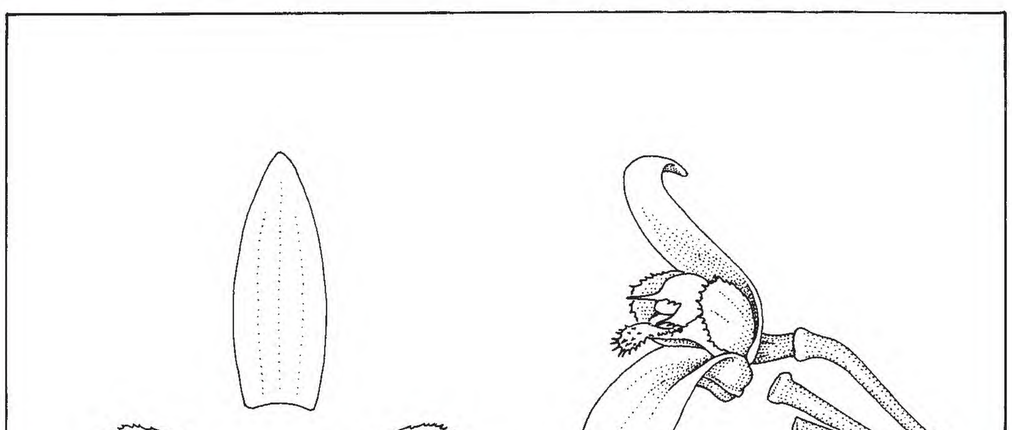


Fig. 102b. Panmorphia barbulata
Pleurothallis minutissima

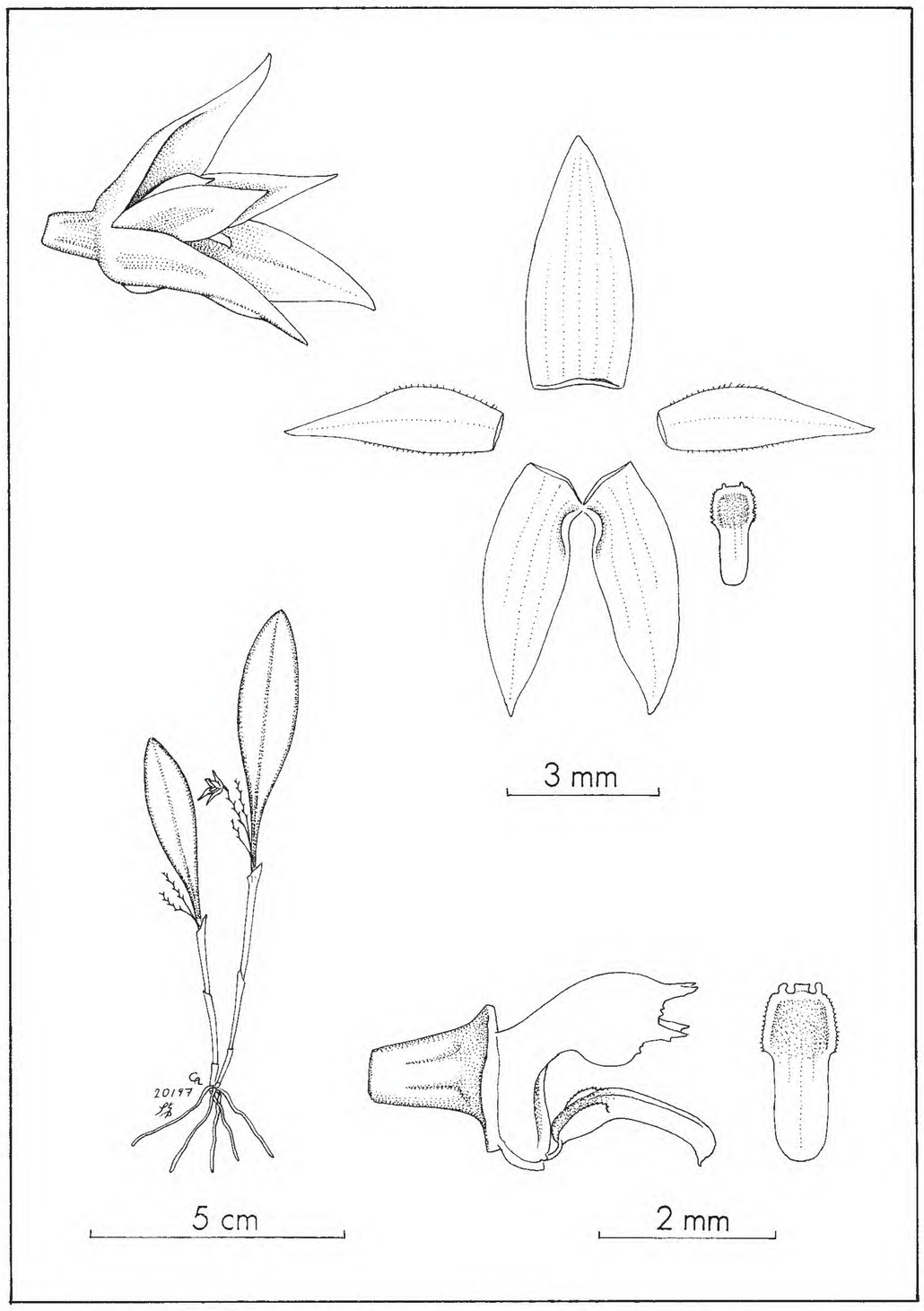


Fig. 103. Panmorphia brevipes

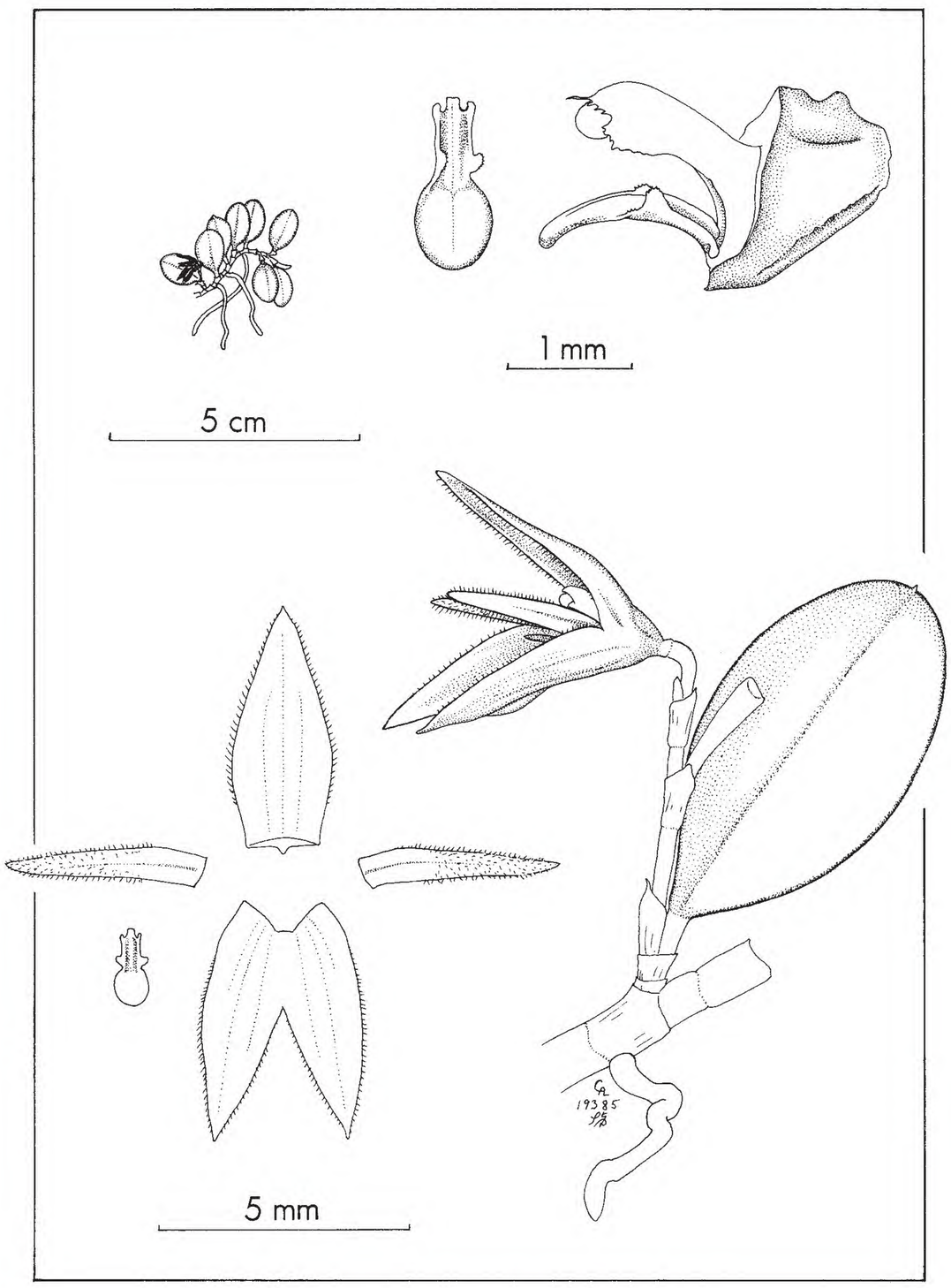


Fig. 104. Panmorphia burzlaffiana

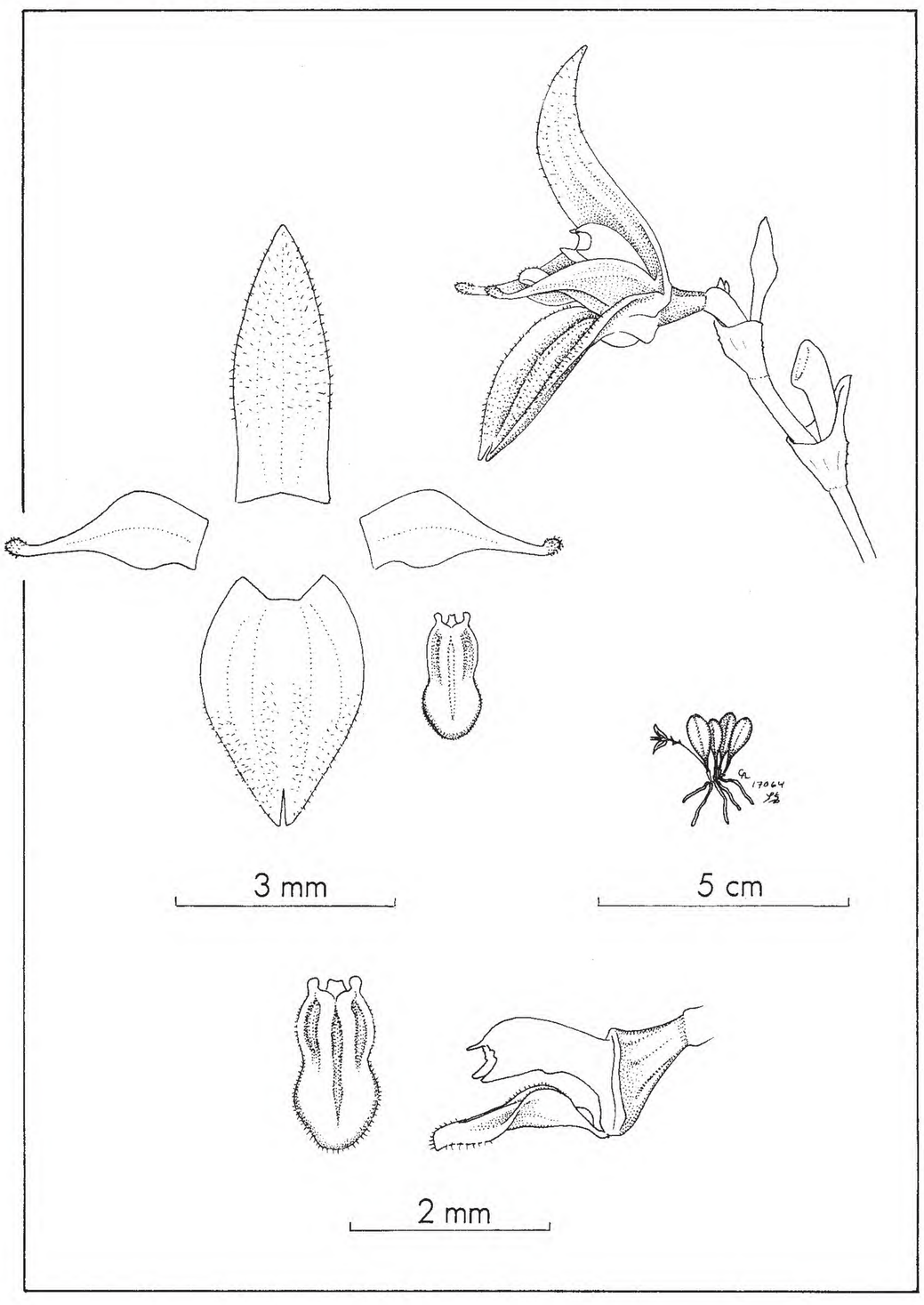


Fig. 105. Panmorphia casualis

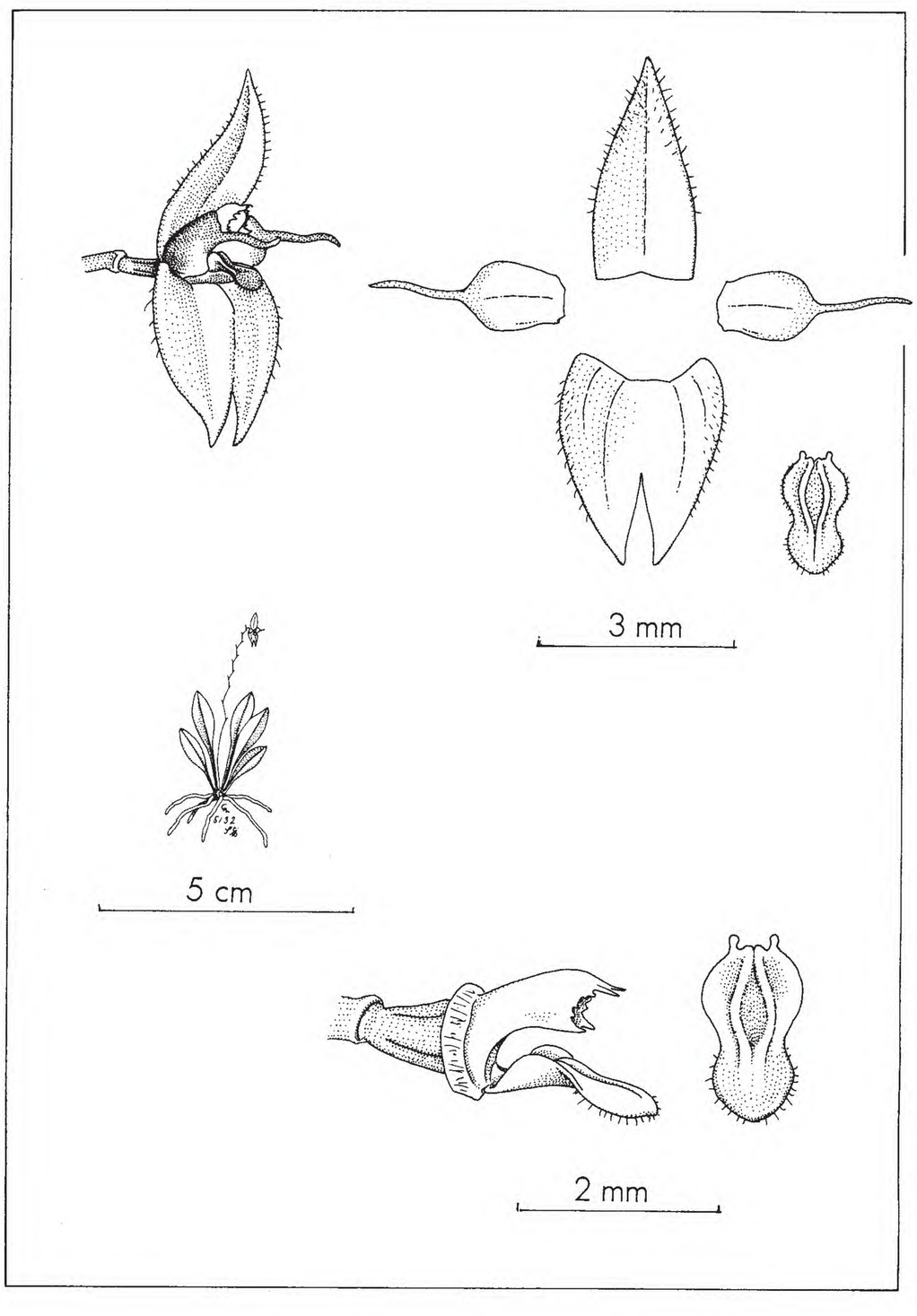


Fig. 106. Panmorphia caudatipetala

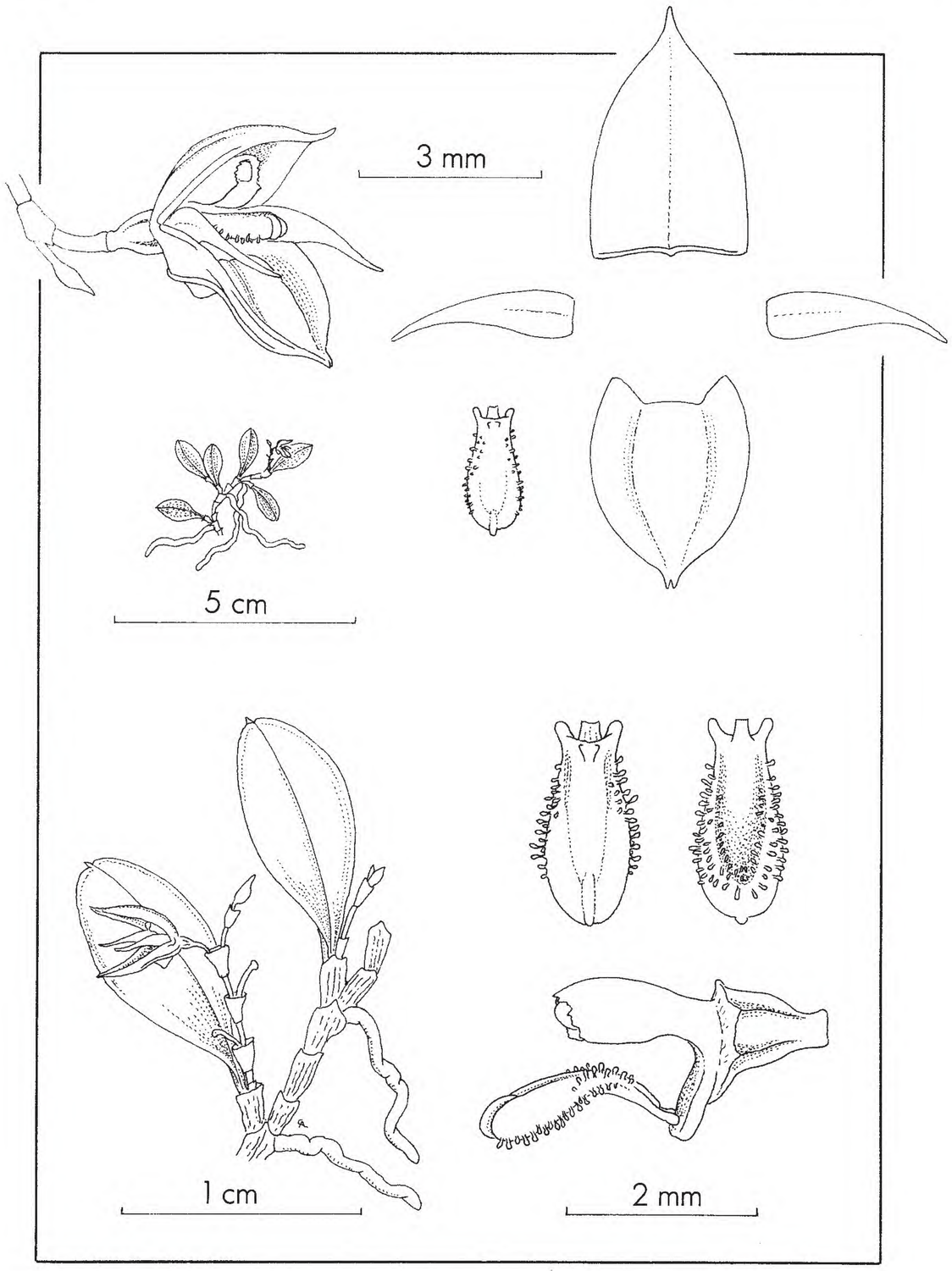


Fig. 107. Panmorphia clandestina

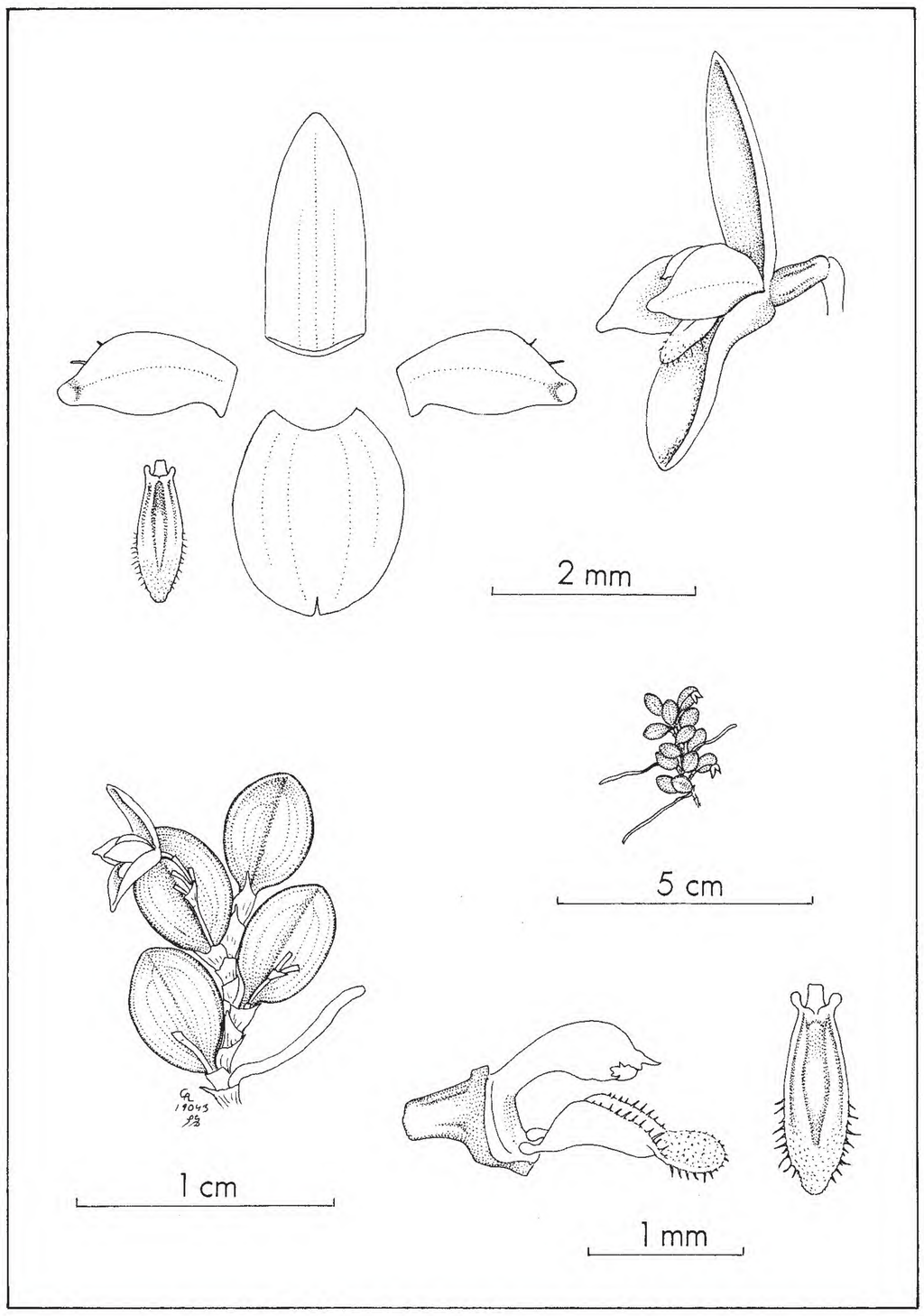


Fig. 108. Panmorphia comayagensis

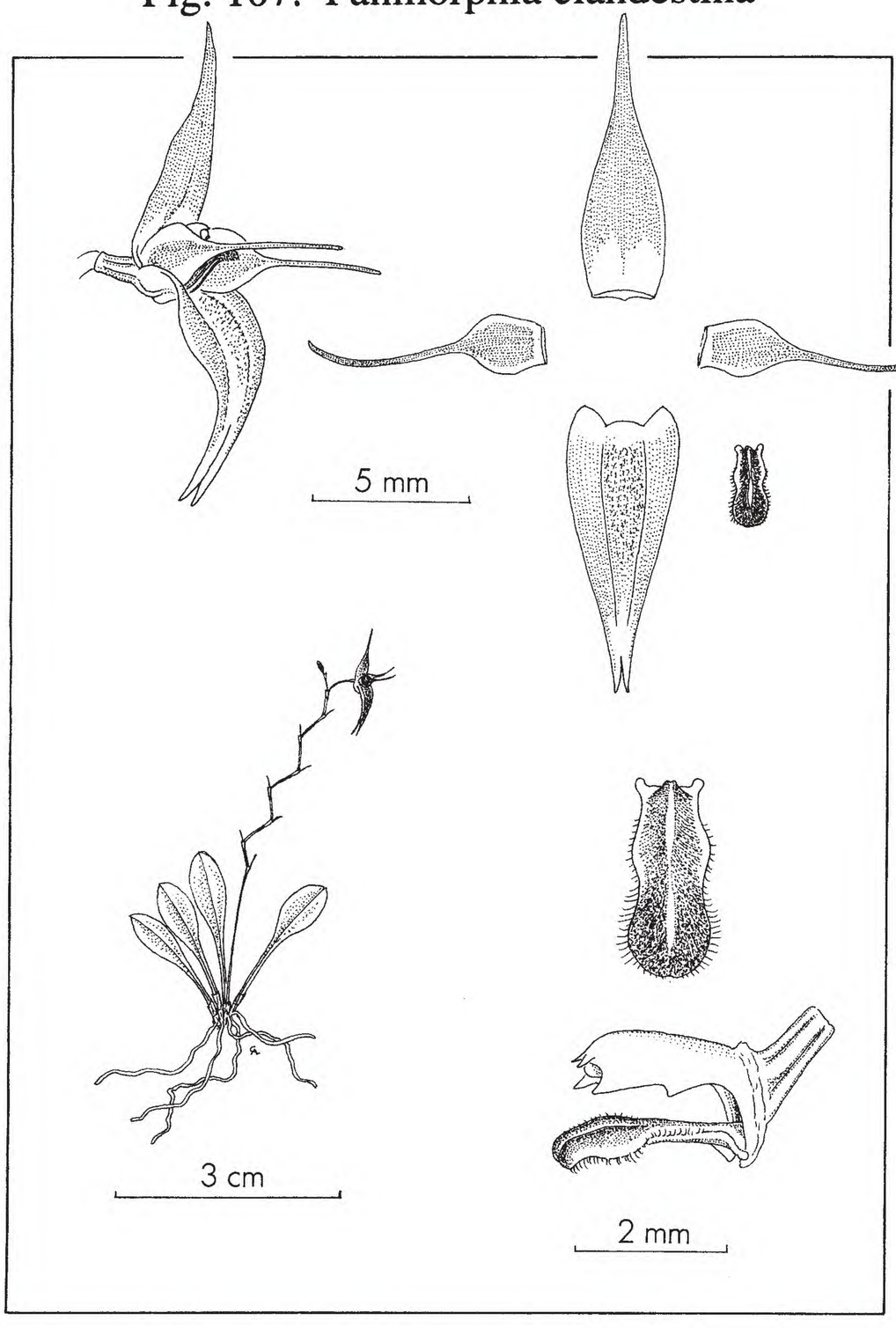


Fig. 109. Panmorphia cuspidata

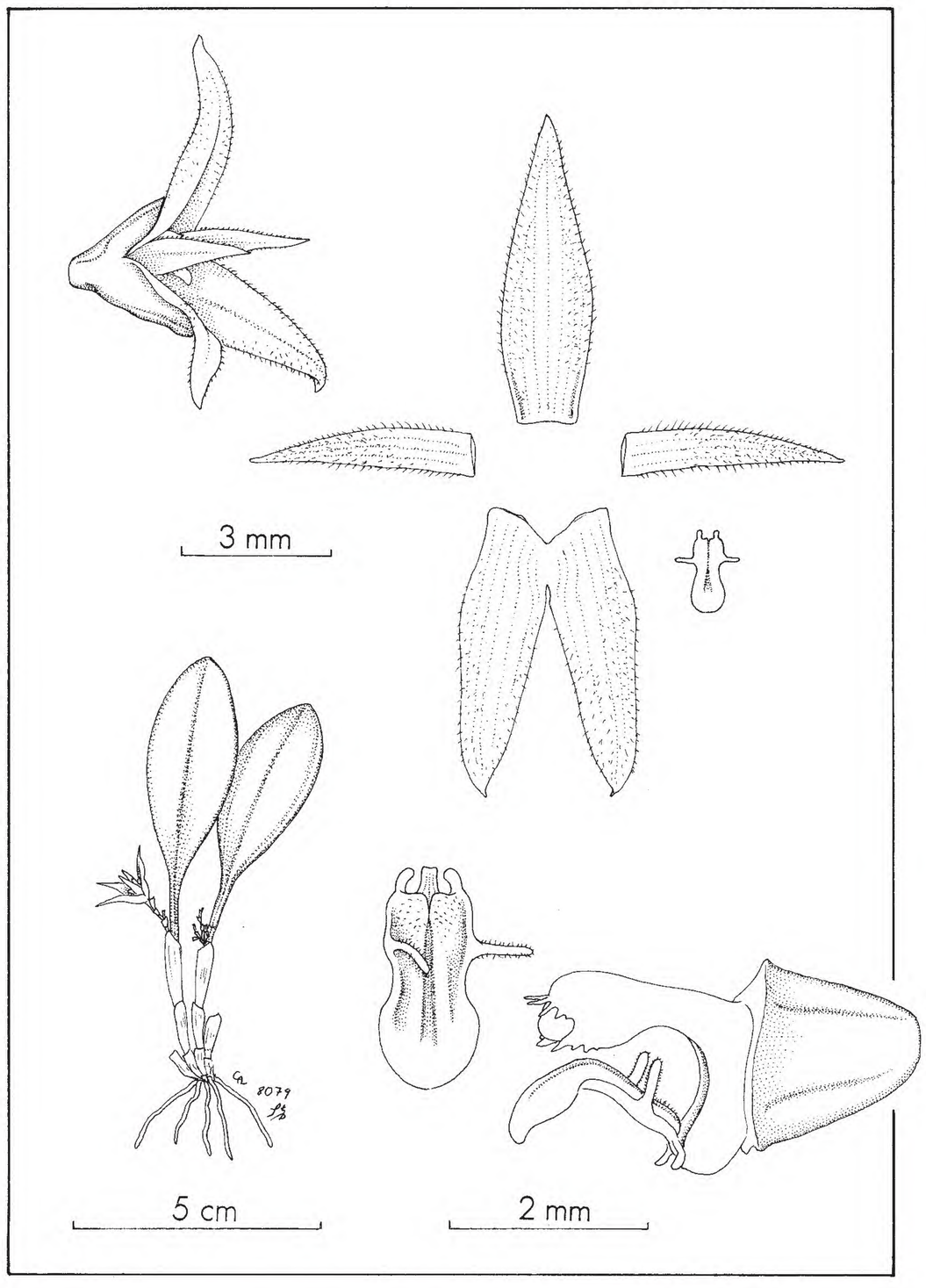


Fig. 110. Panmorphia delessandroi

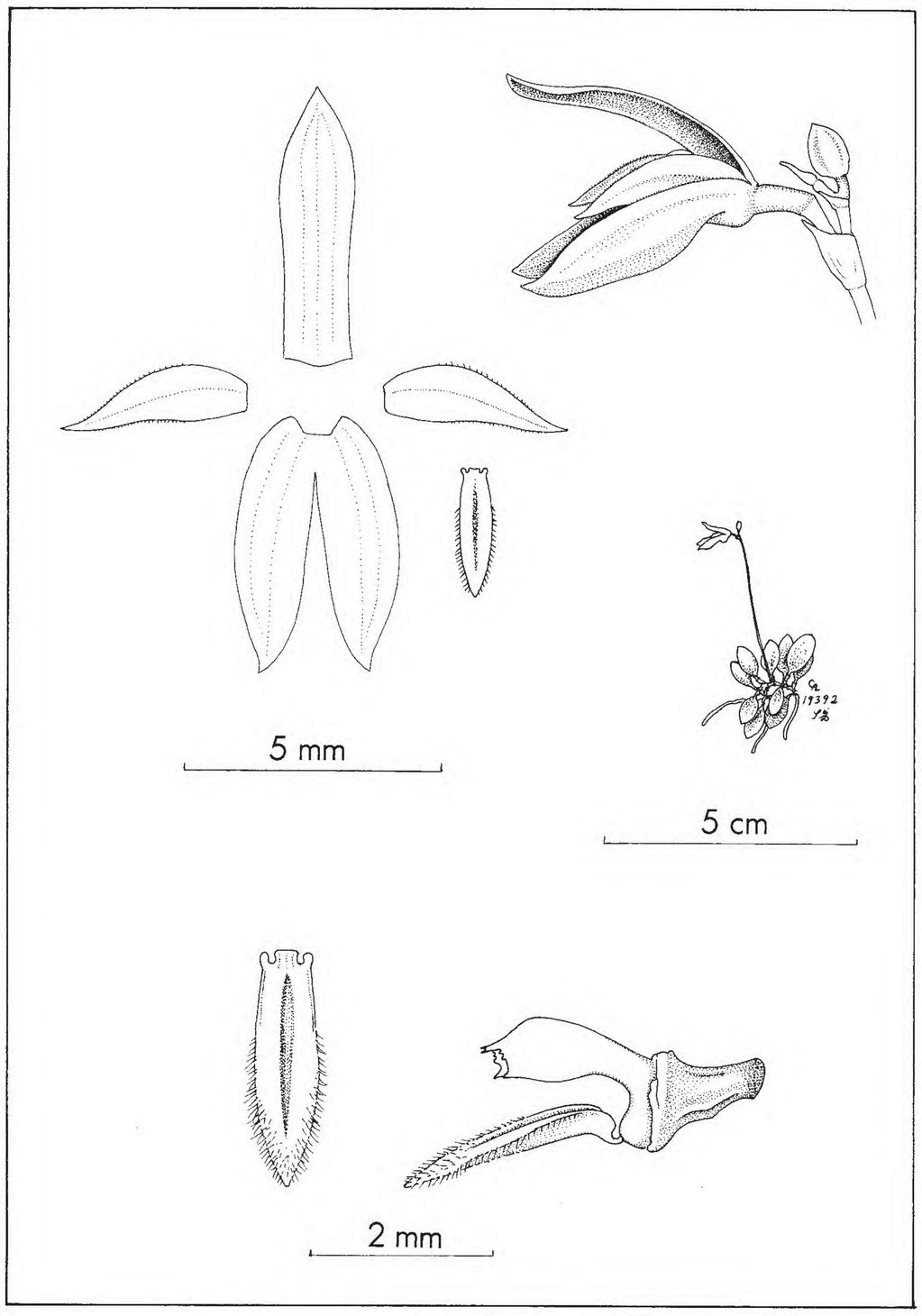


Fig. 111. Panmorphia duplooyi

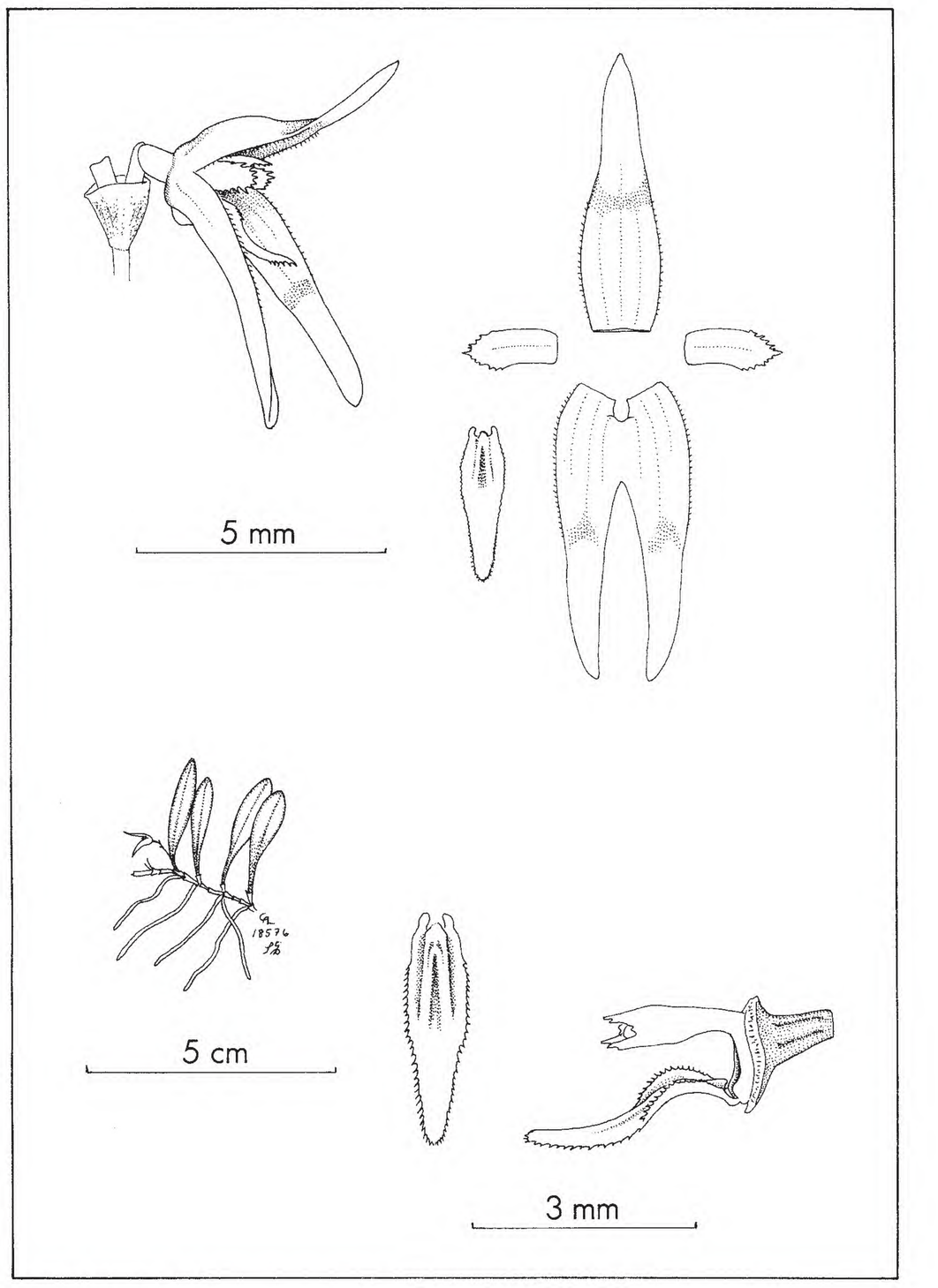


Fig. 112. Panmorphia endresii

Fig. 113. Panmorphia escalarensis

Fig. 114. Panmorphia fractiflexa

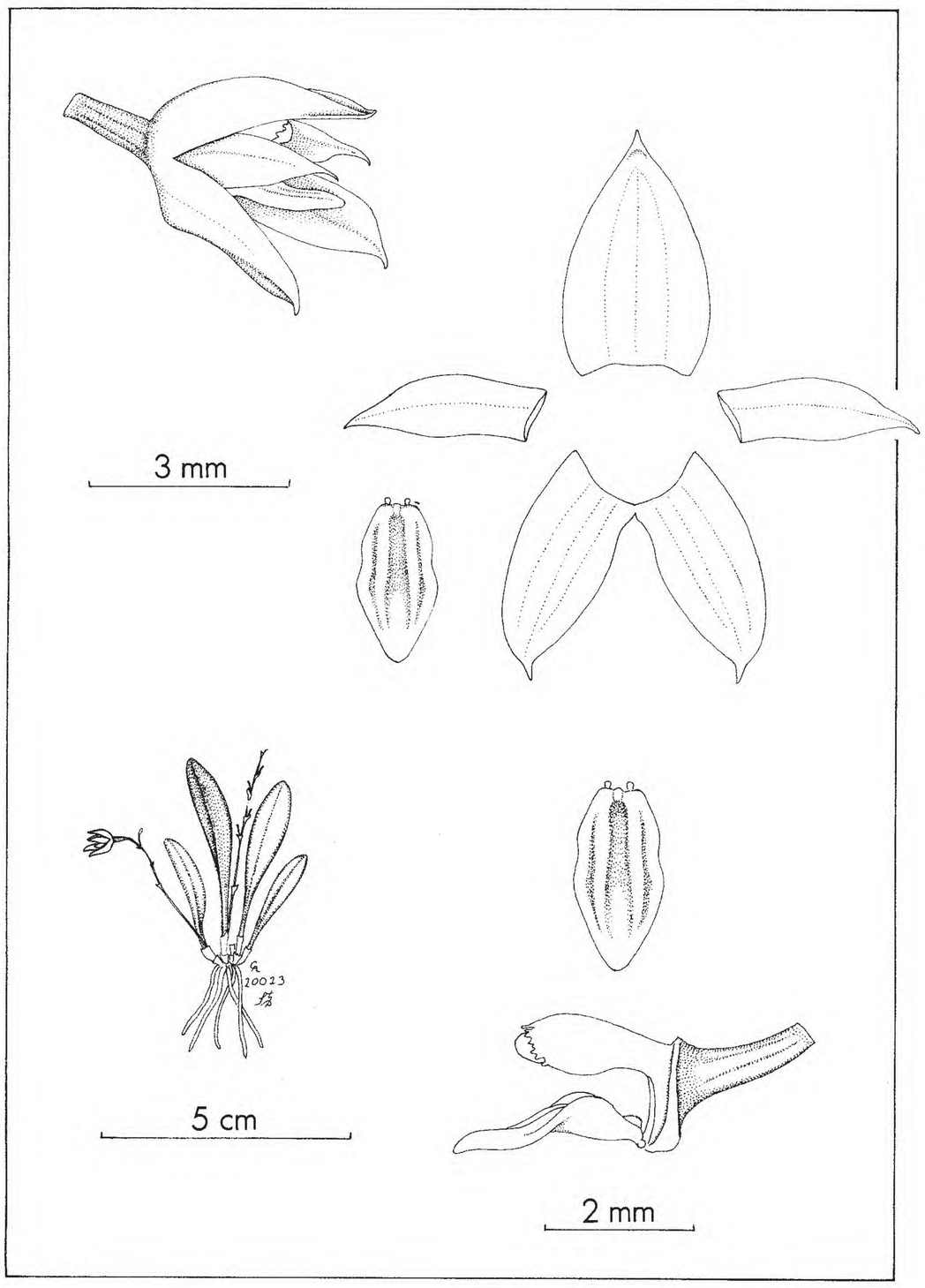


Fig. 115. Panmorphia francesiana

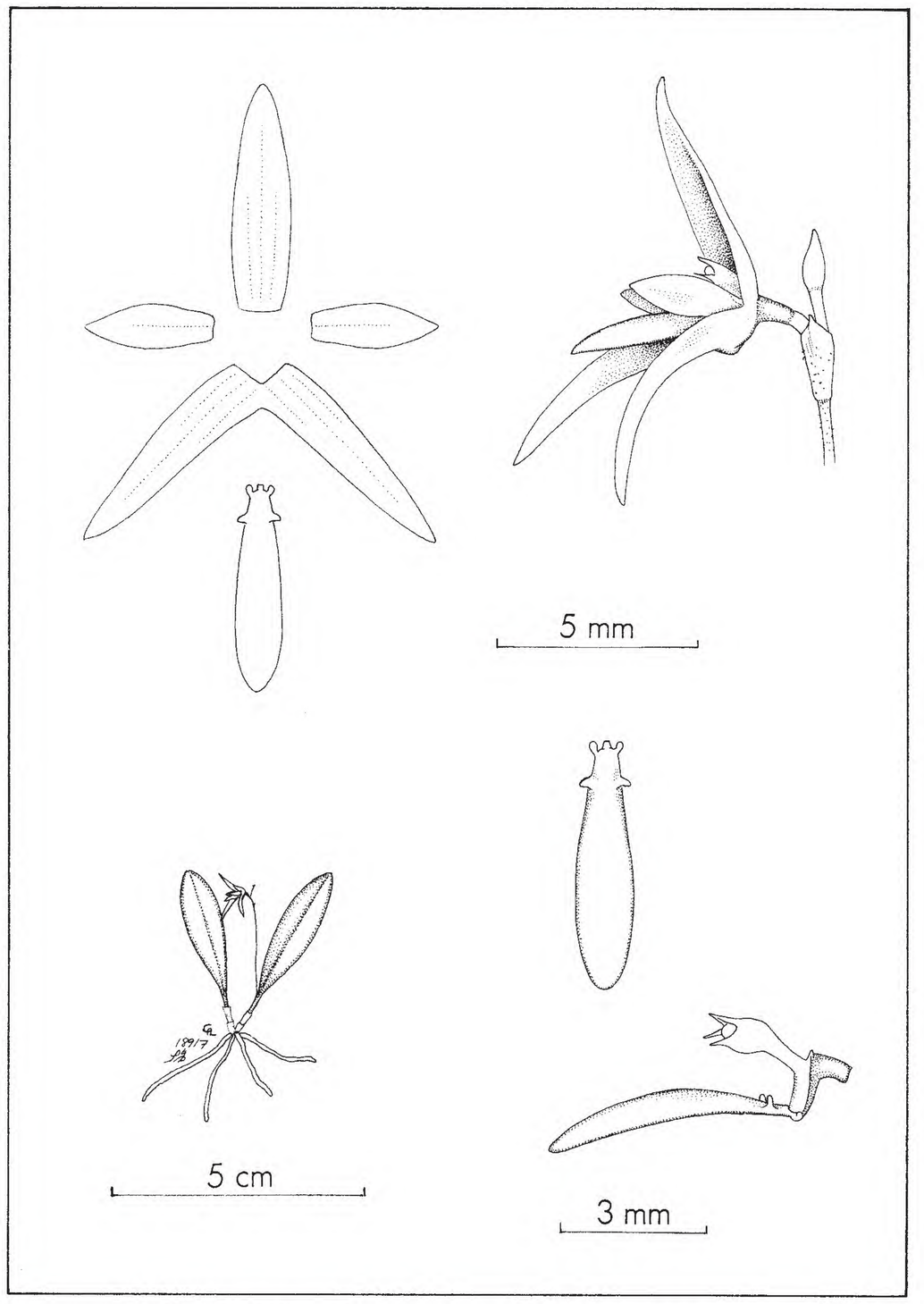


Fig. 116a. Panmorphia funerea
Pleurothallis breviscapa

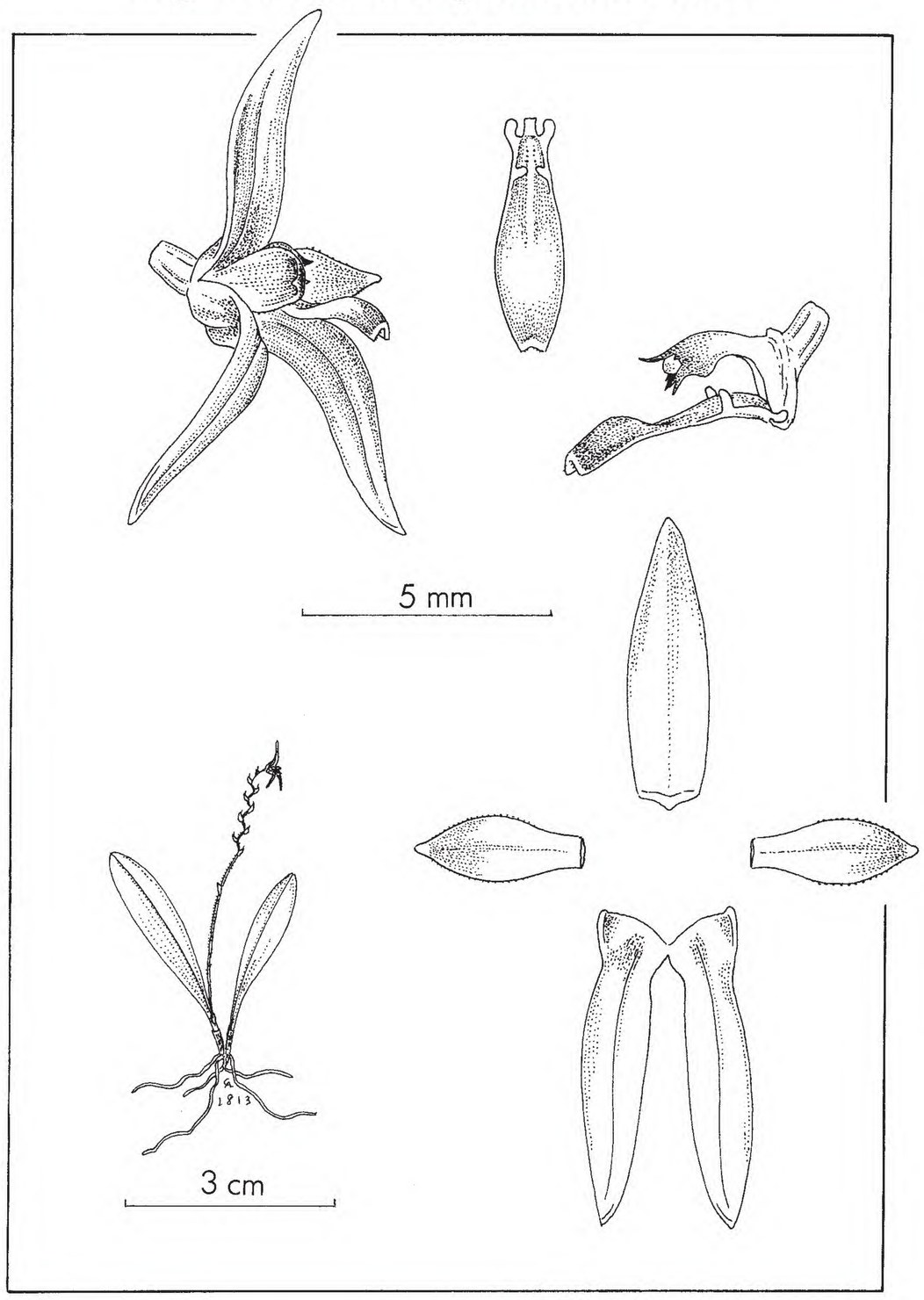


Fig. 116b. Panmorphia funerea
Pleurothallis praemorsa

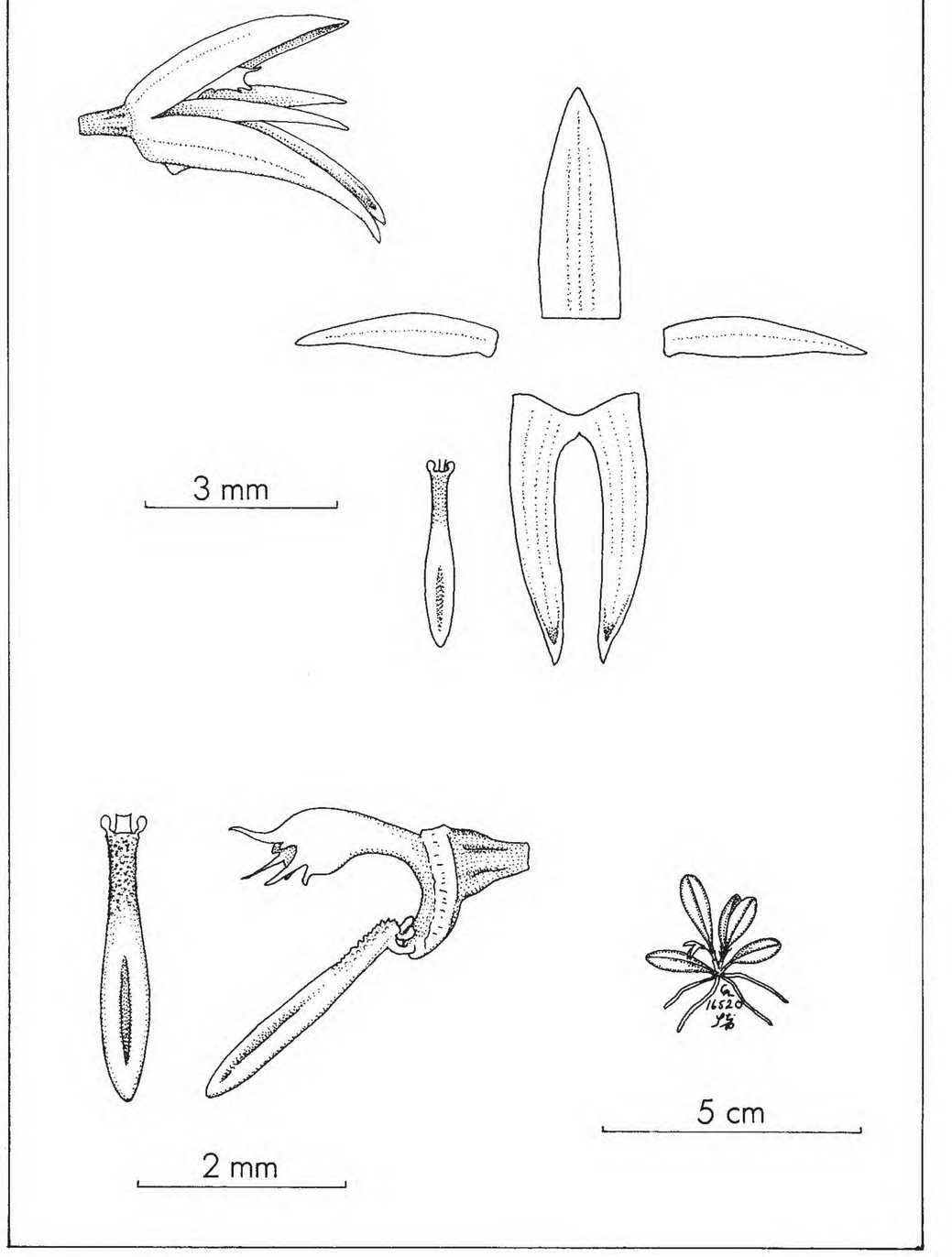


Fig. 117. Panmorphia grayumii

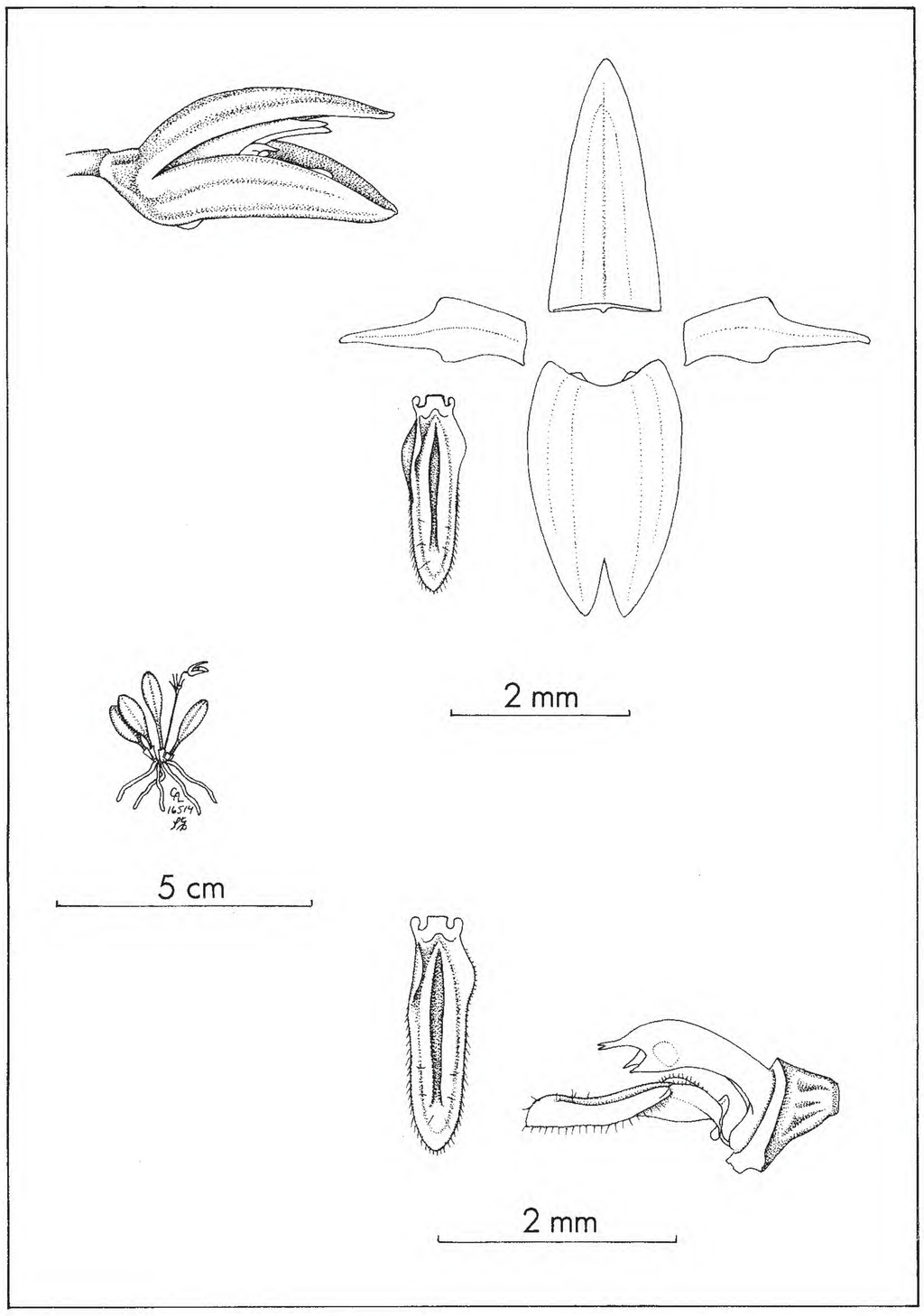


Fig. 118. Panmorphia haberi

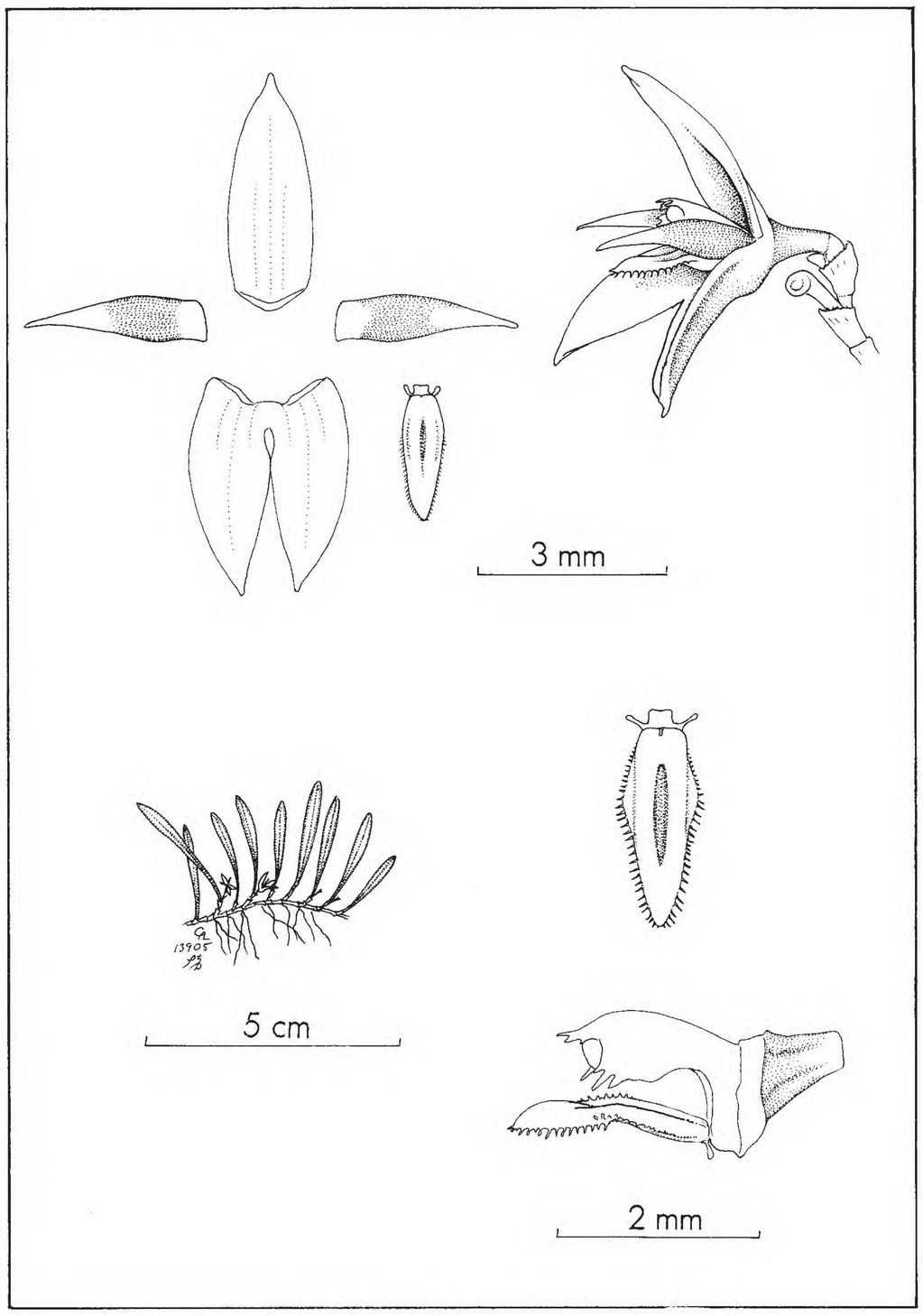


Fig. 119. Panmorphia herpethophyton

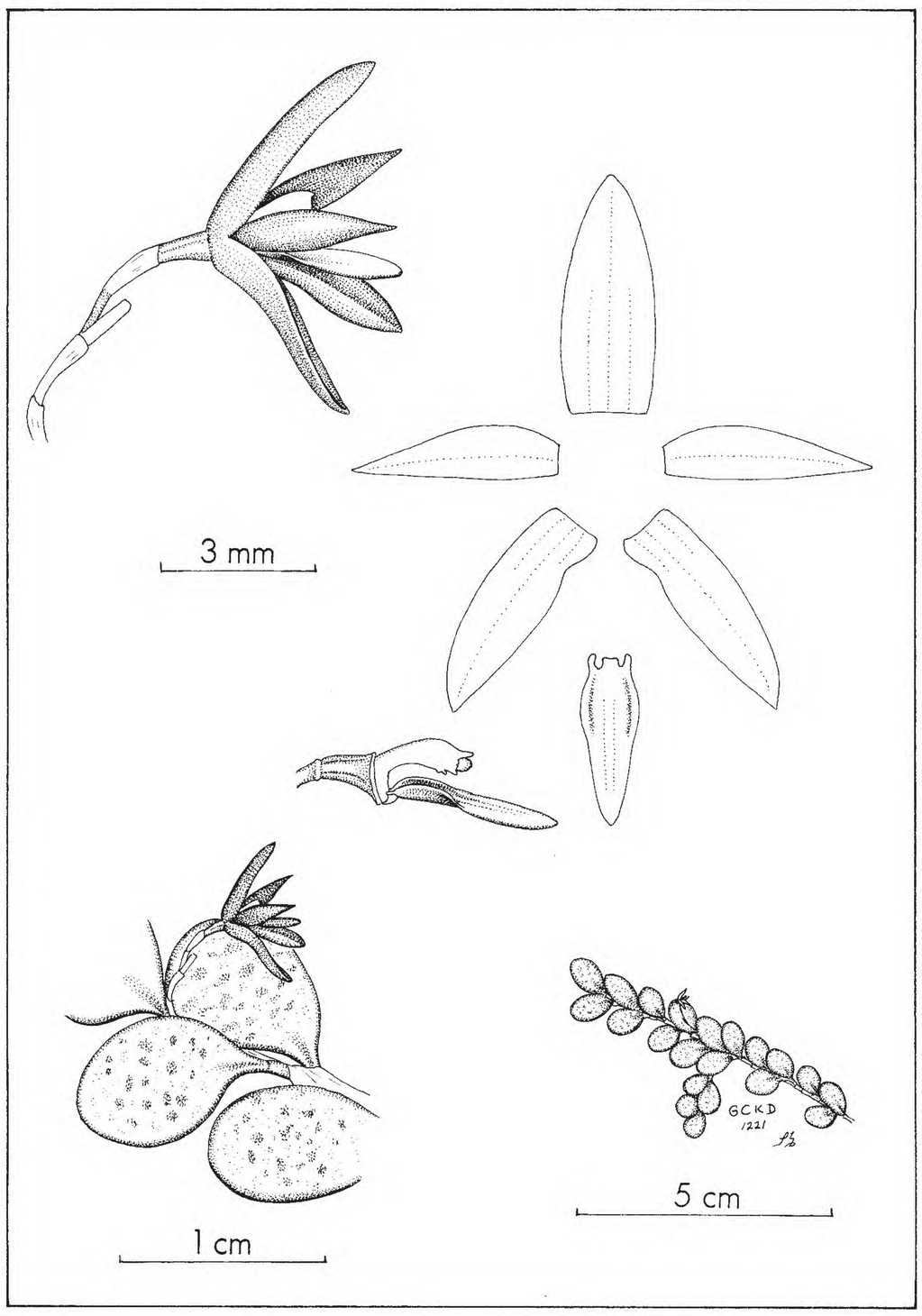


Fig. 120. Panmorphia holstii

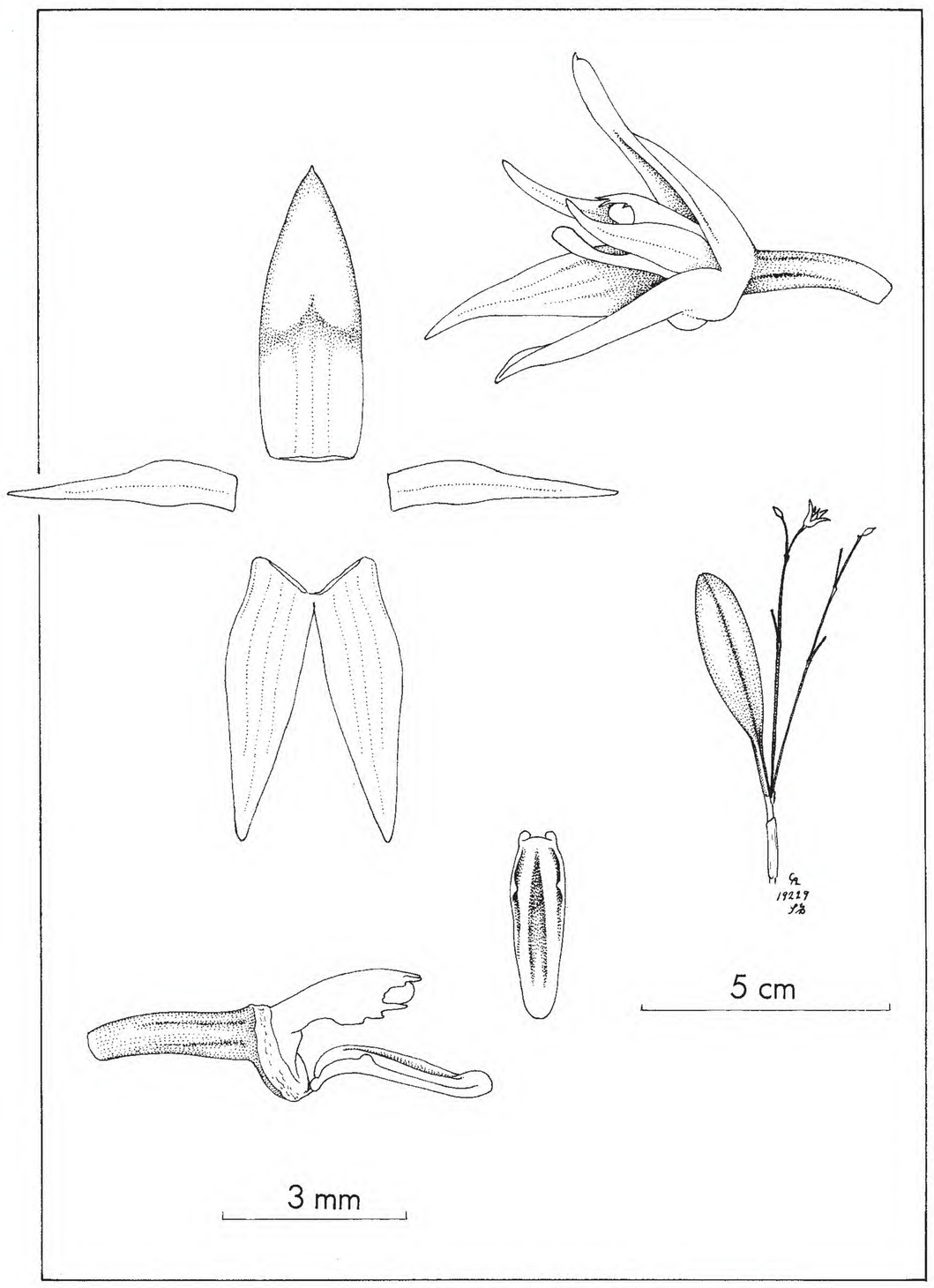


Fig. 121. Panmorphia humilis

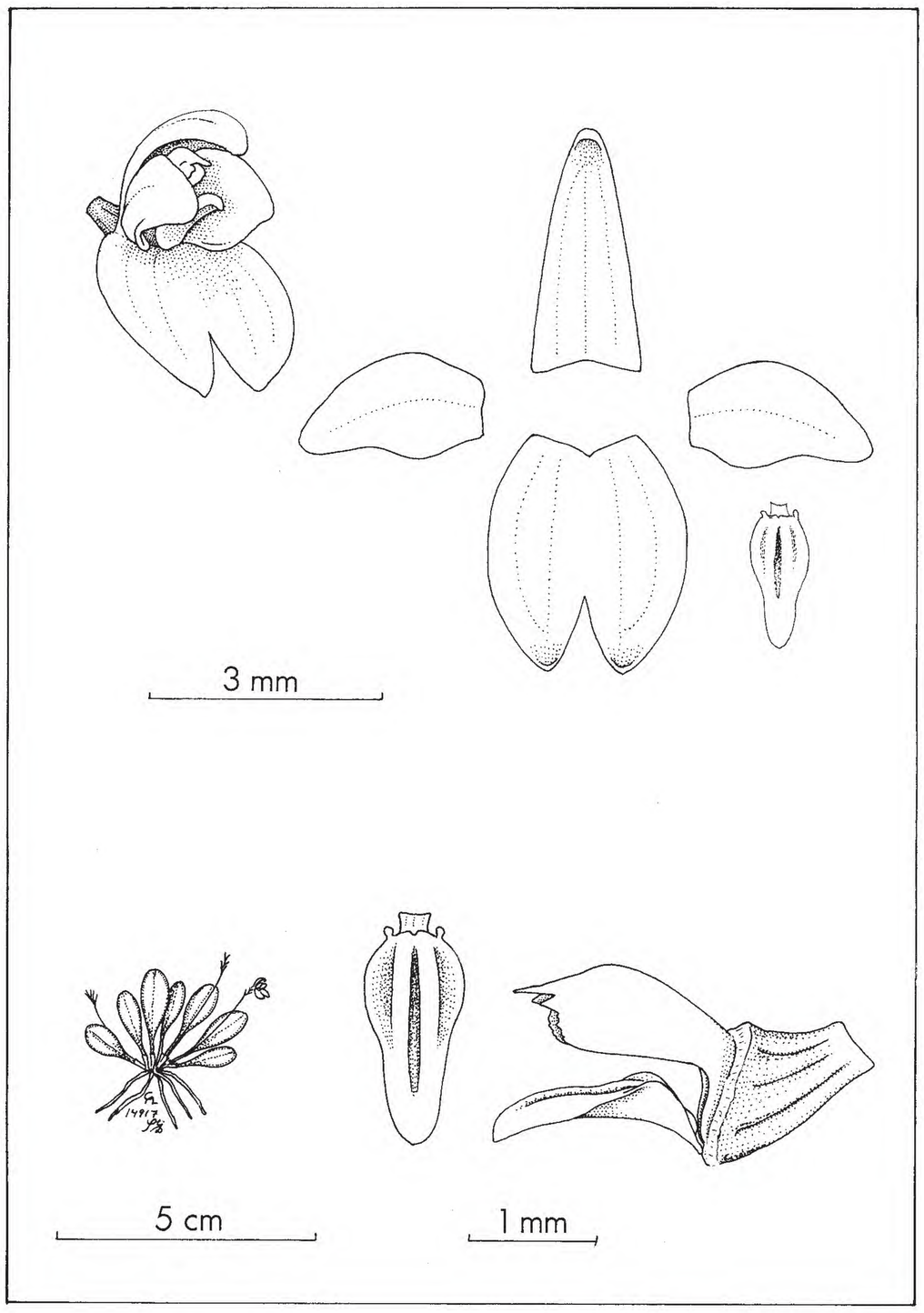


Fig. 122a. Panmorphia imberbis

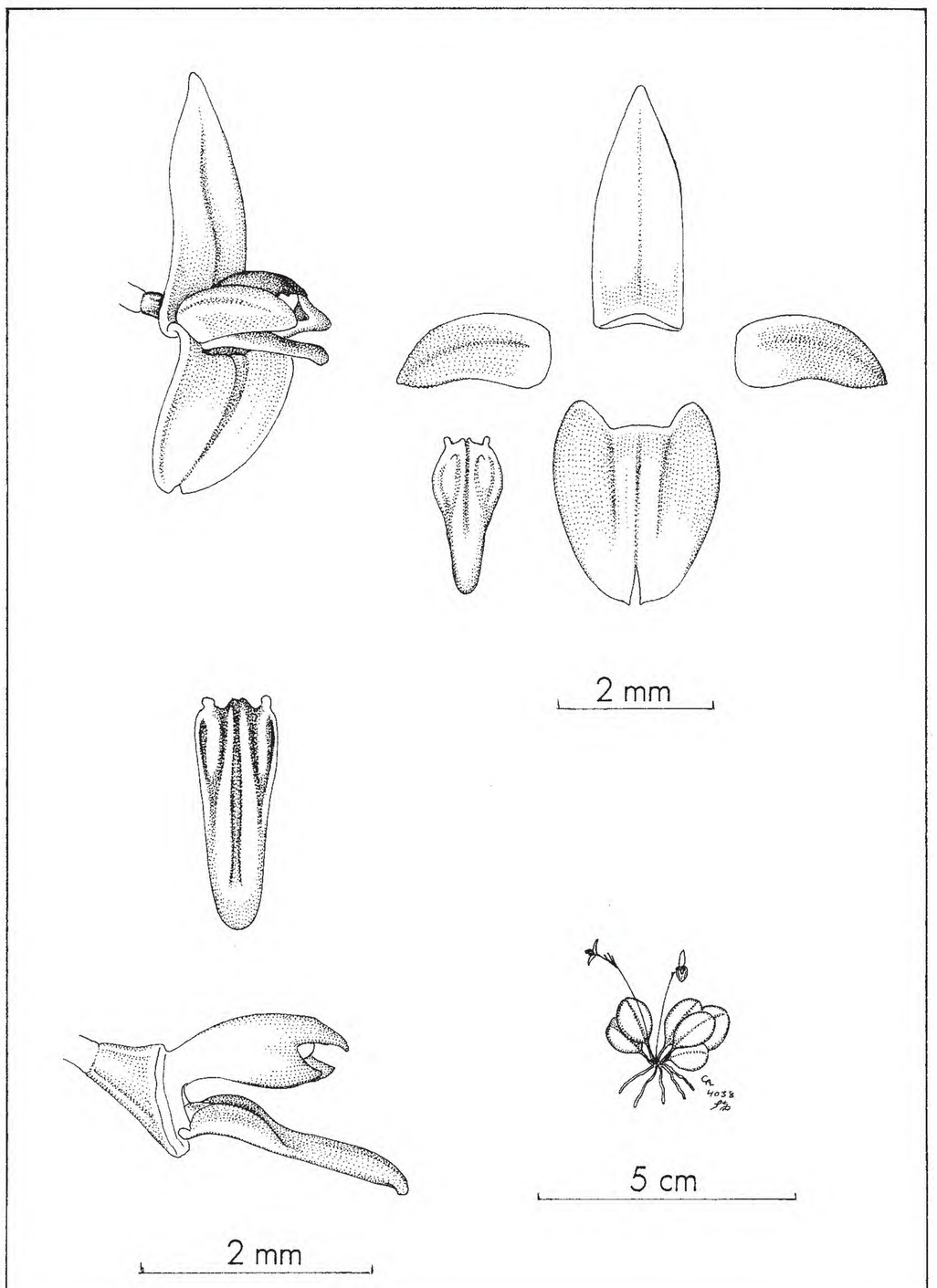


Fig. 122b. Panmorphia imberbis
Pleurothallis depilis

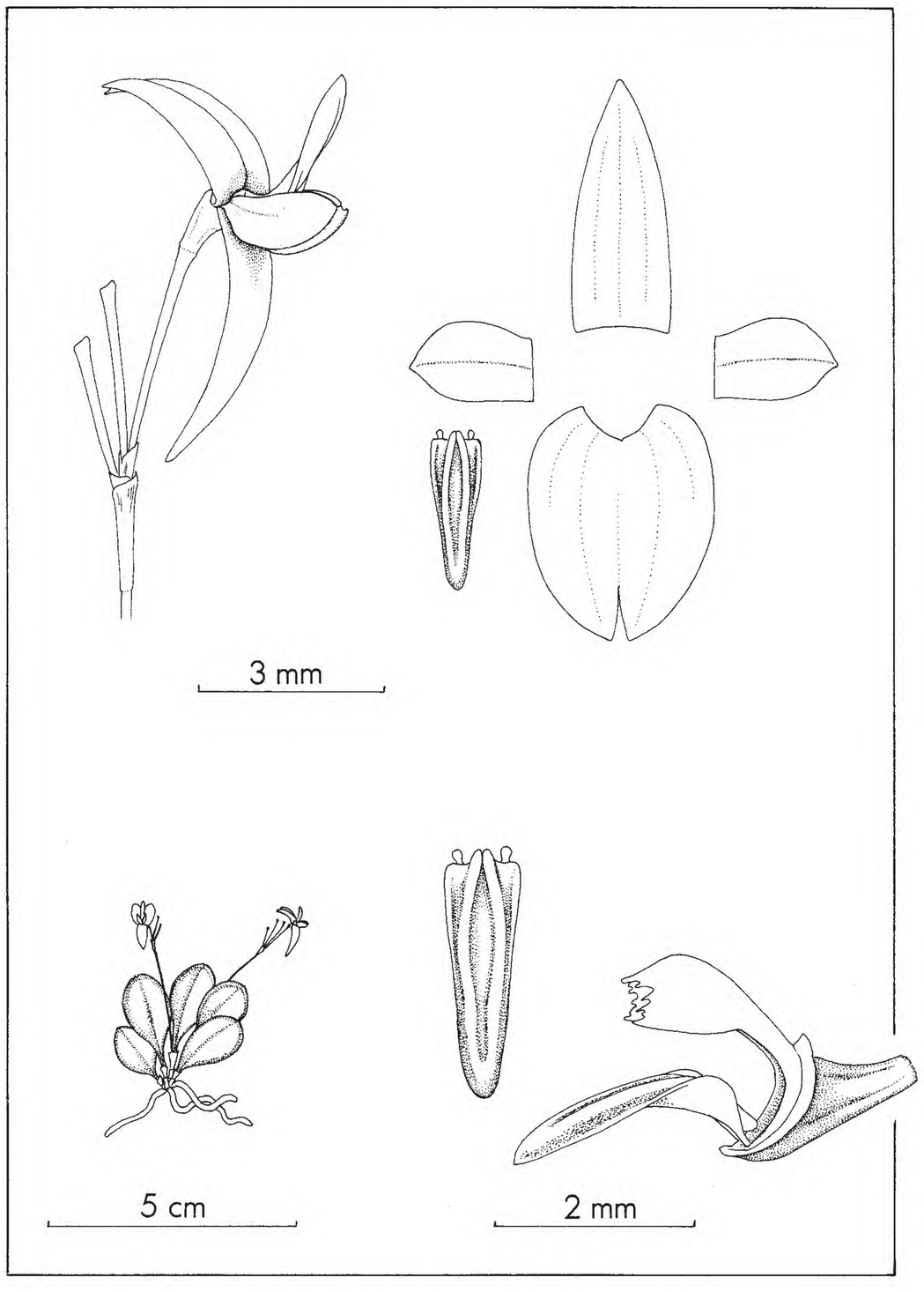


Fig. 123. Panmorphia inversa

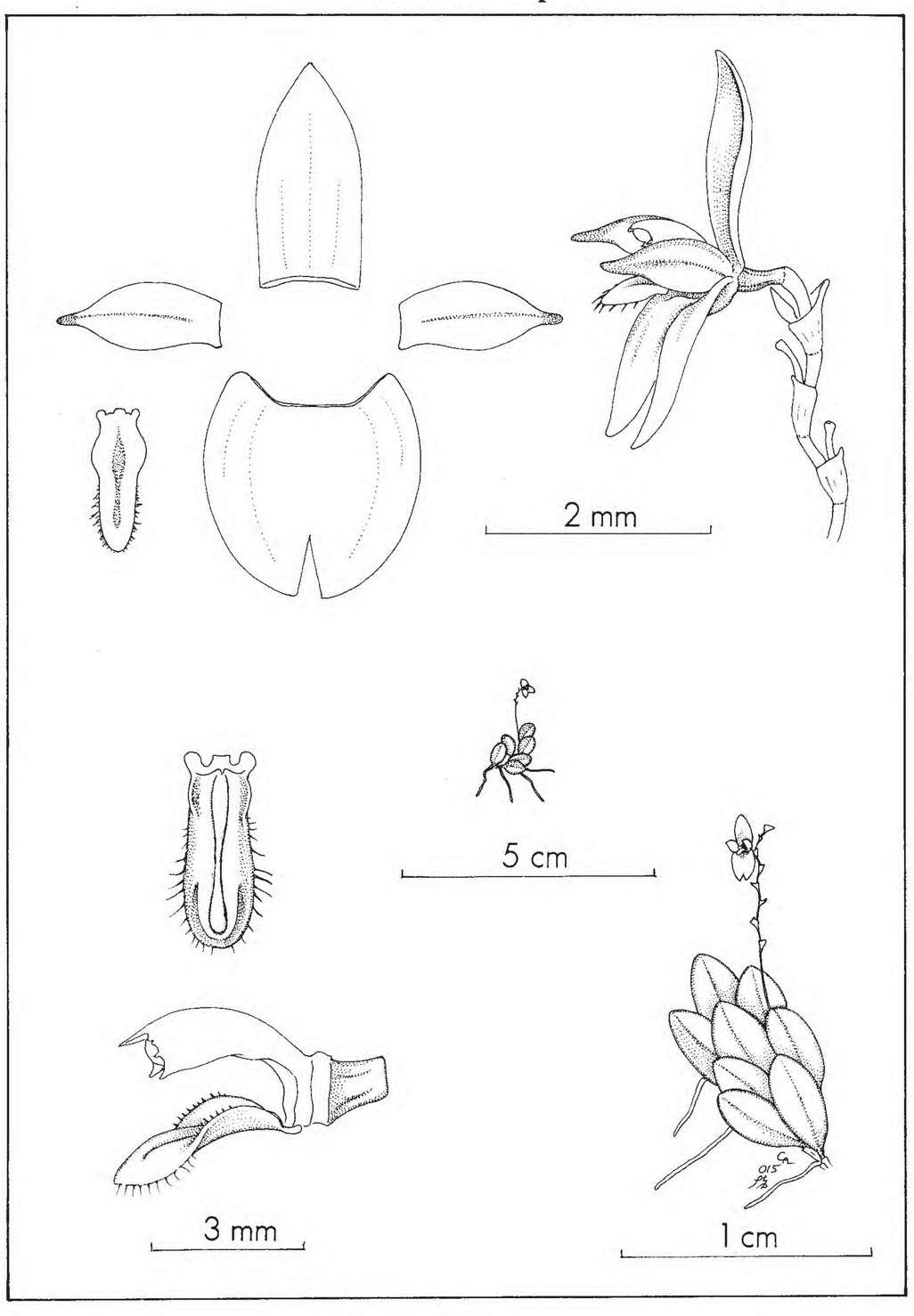


Fig. 124. Panmorphia involuta

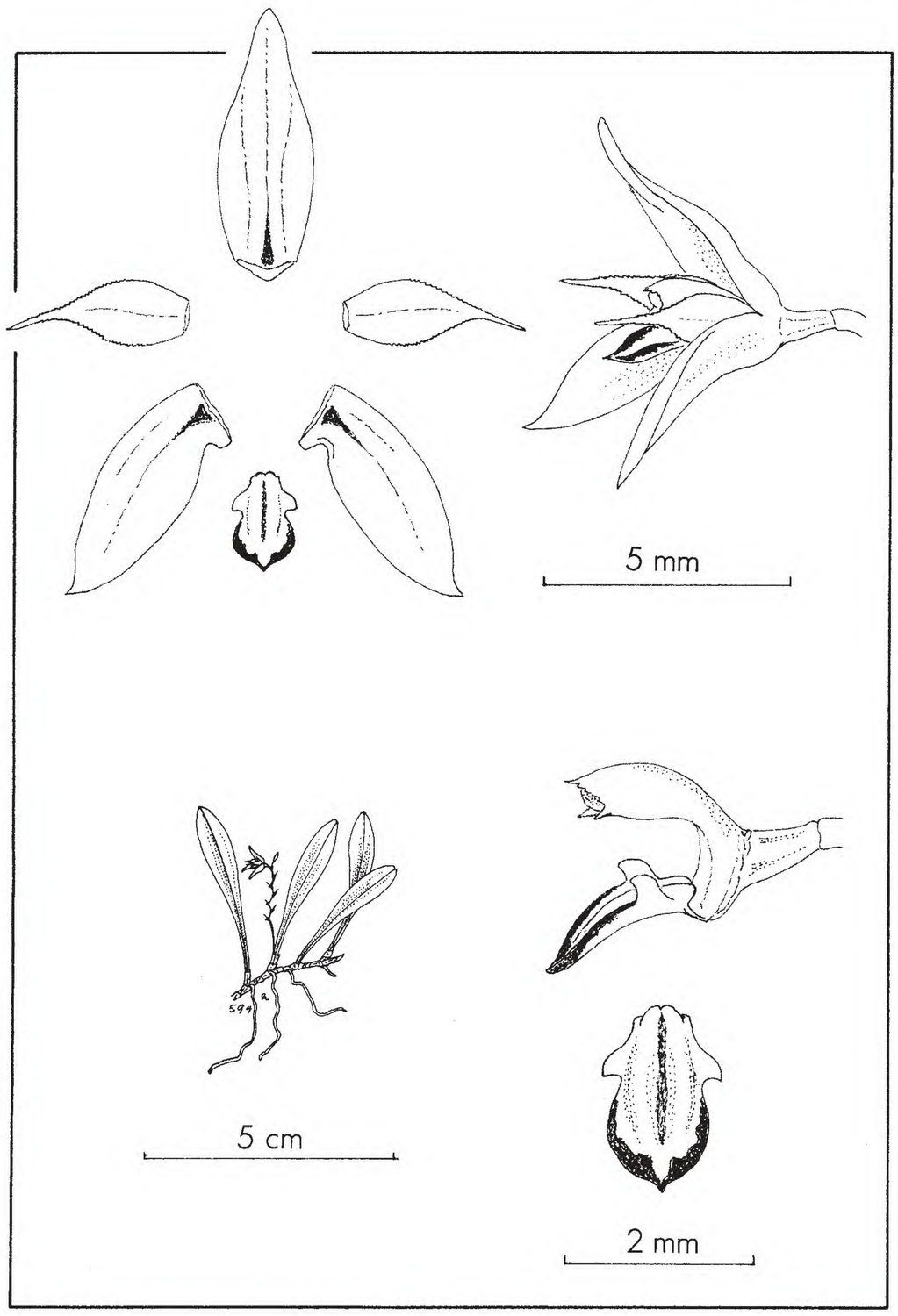


Fig. 125. Panmorphia iota

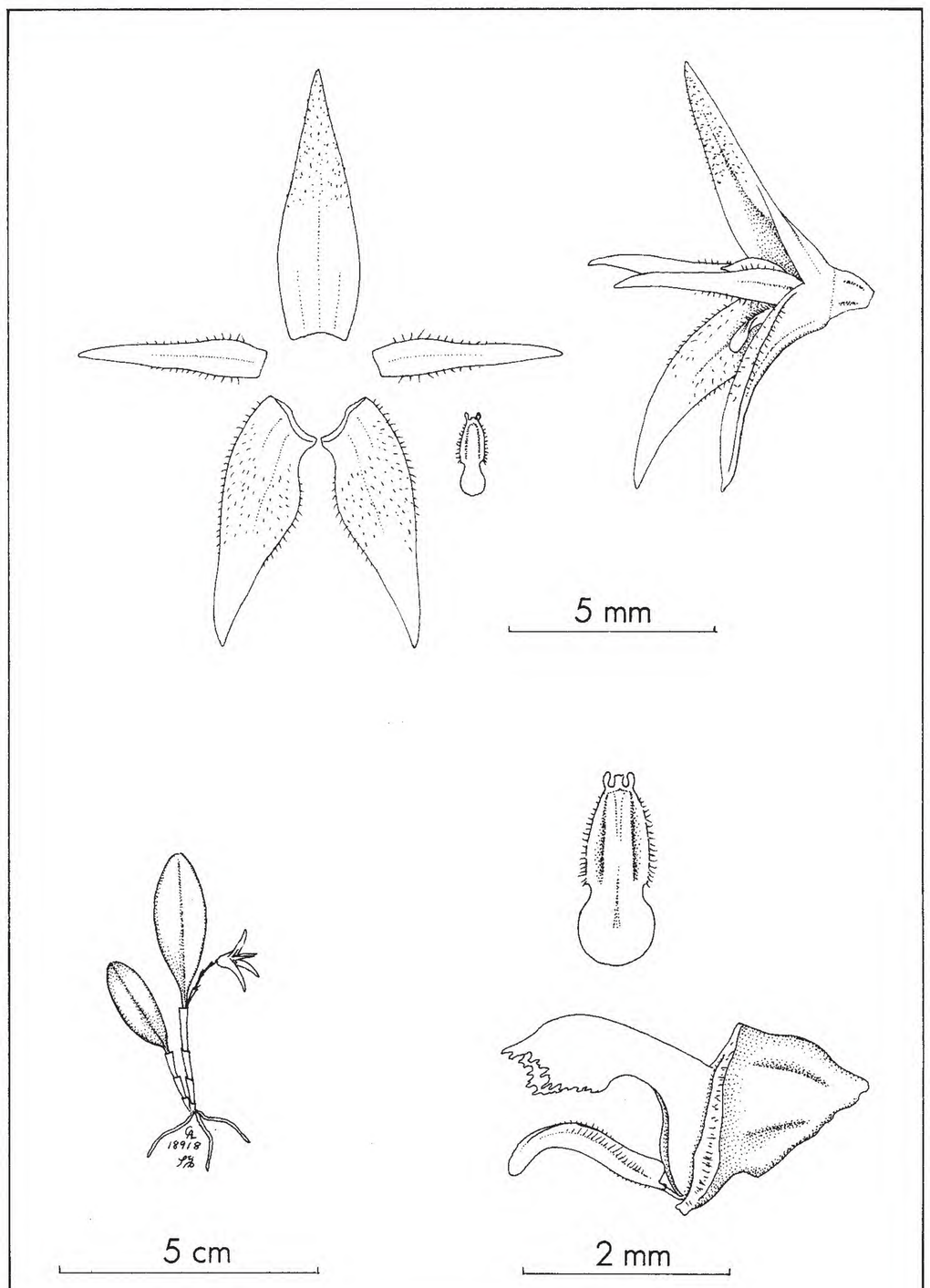


Fig. 126. Panmorphia jamaicensis

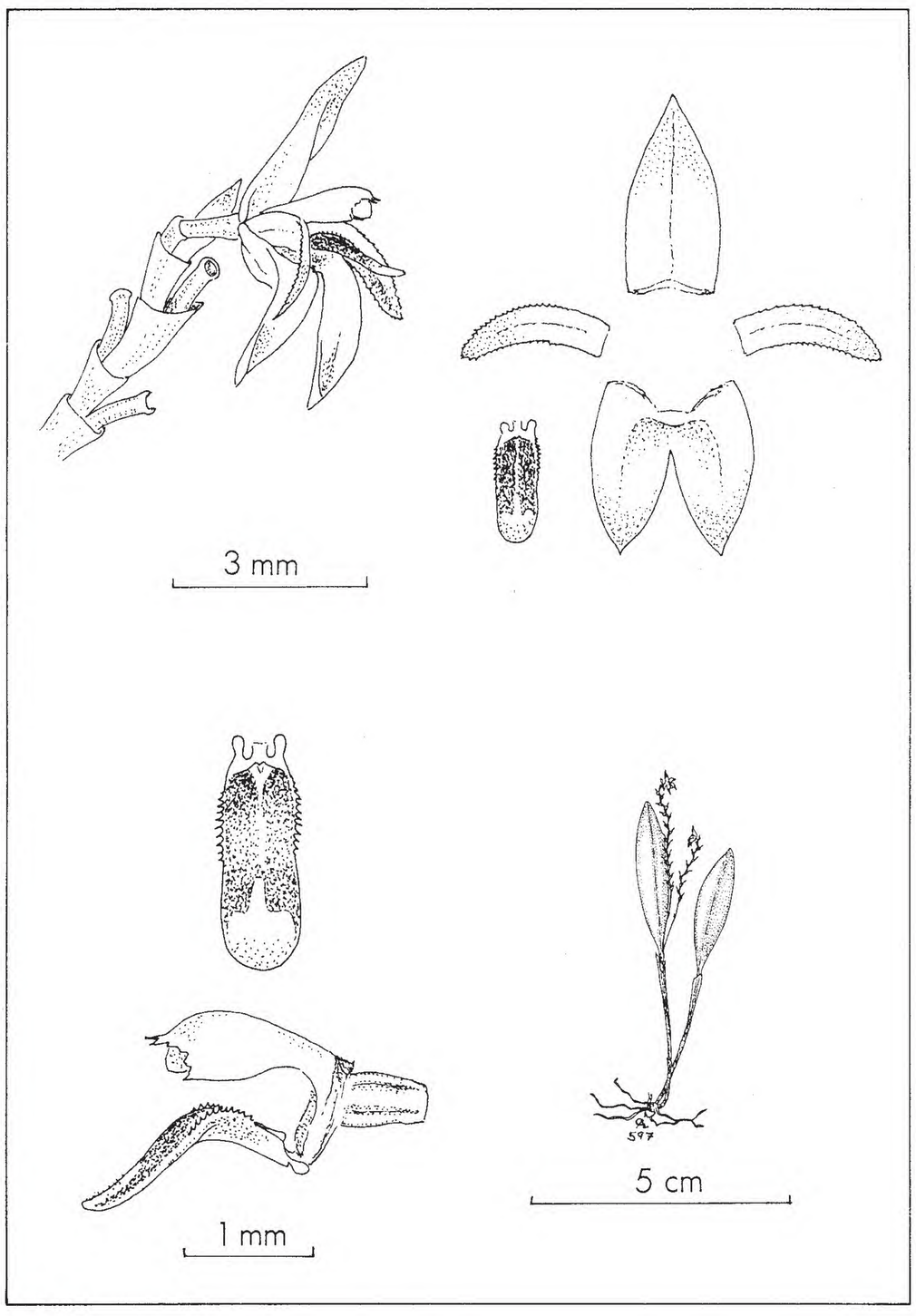


Fig. 127. Panmorphia kuhniae

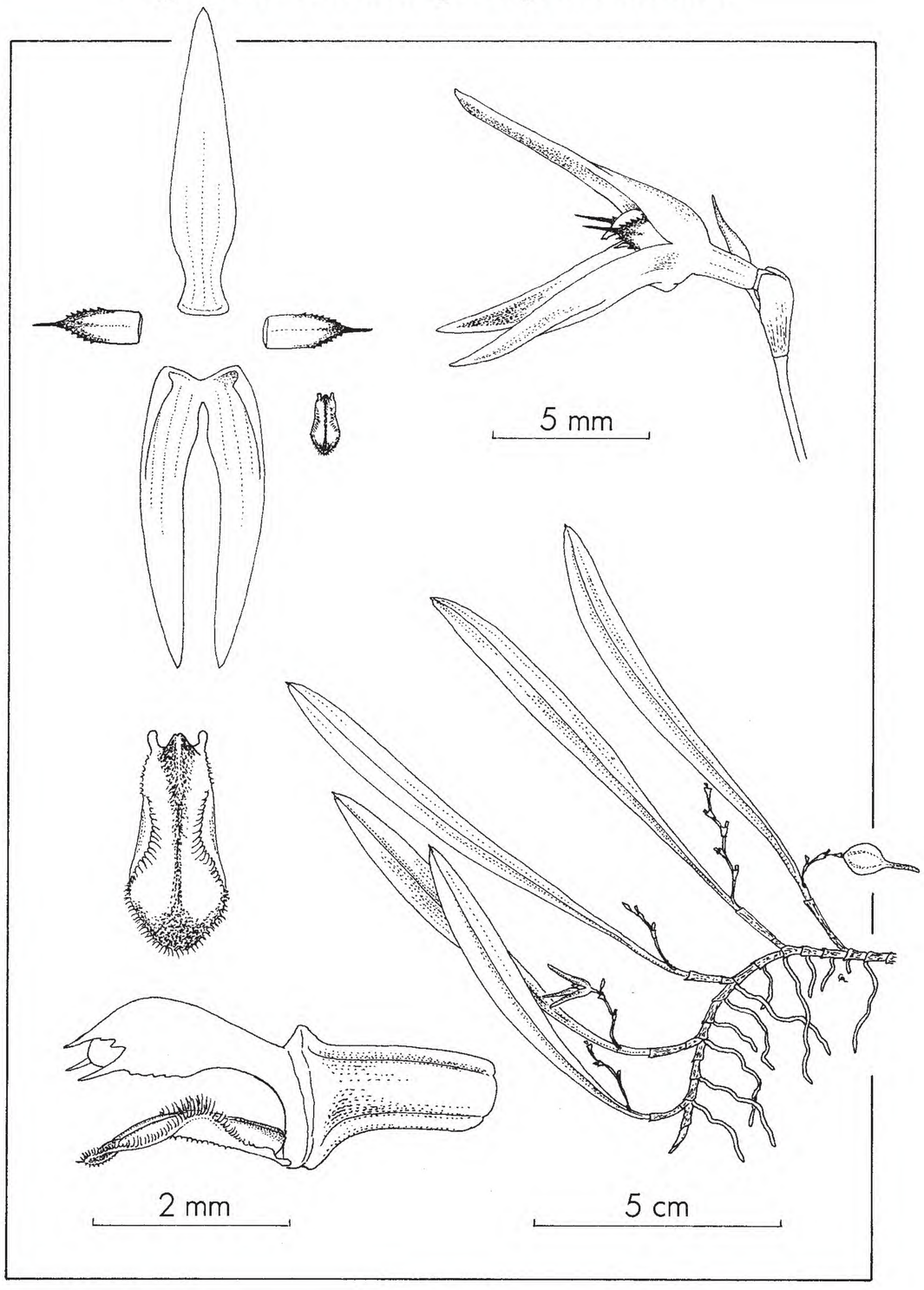


Fig. 128. Panmorphia lassioglossa

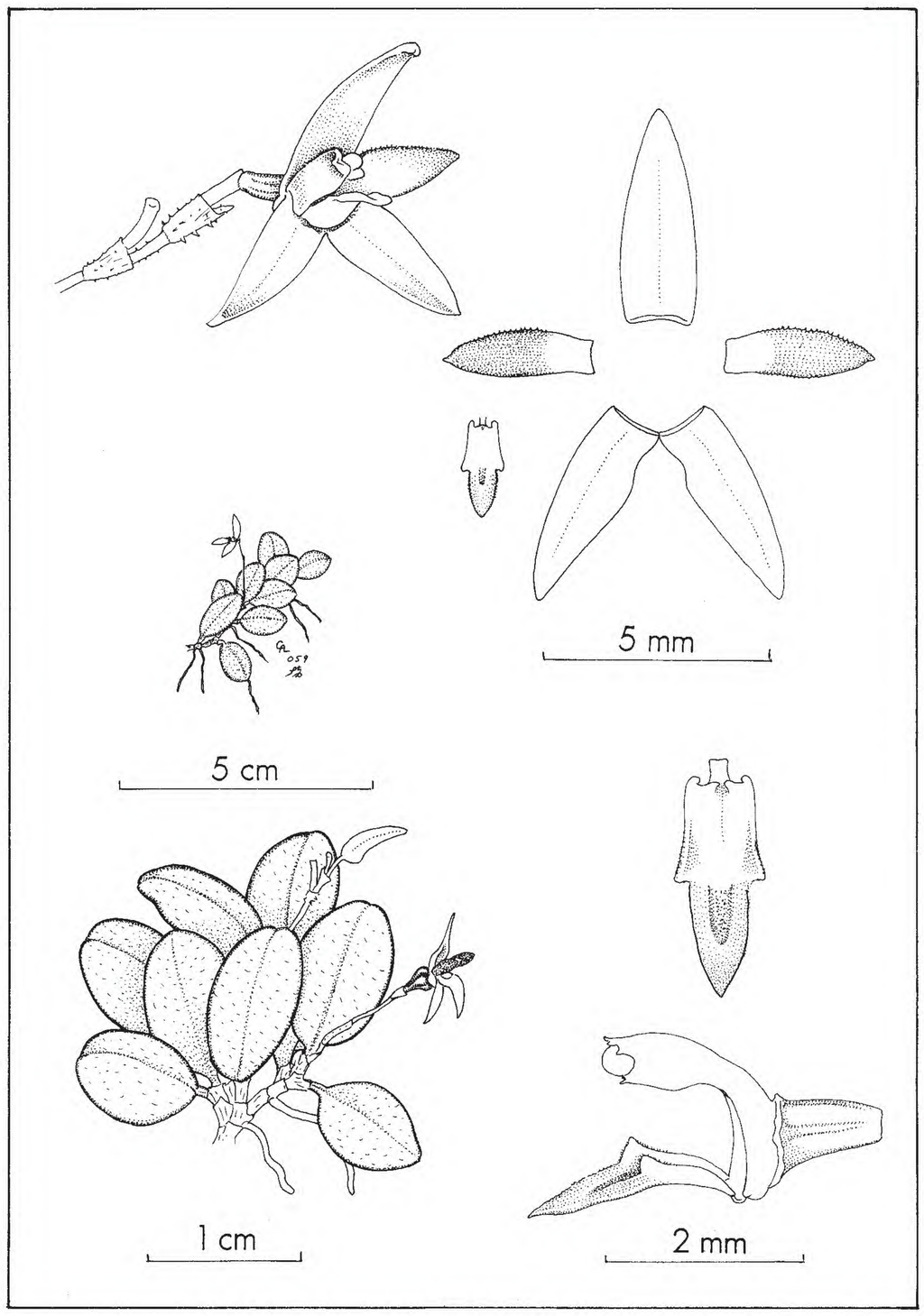


Fig. 129. Panmorphia lewisiae

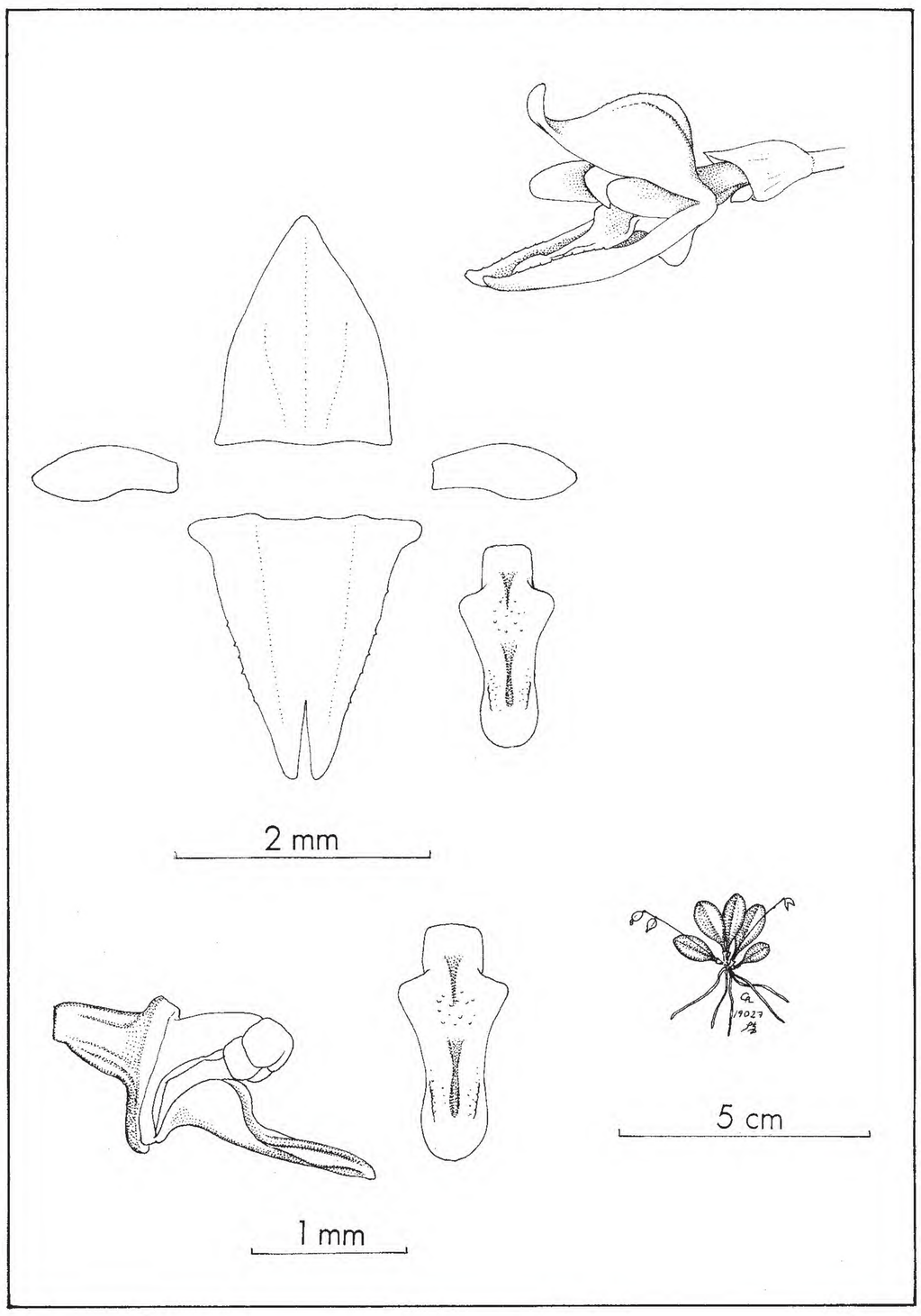


Fig. 130. Panmorphia mazei

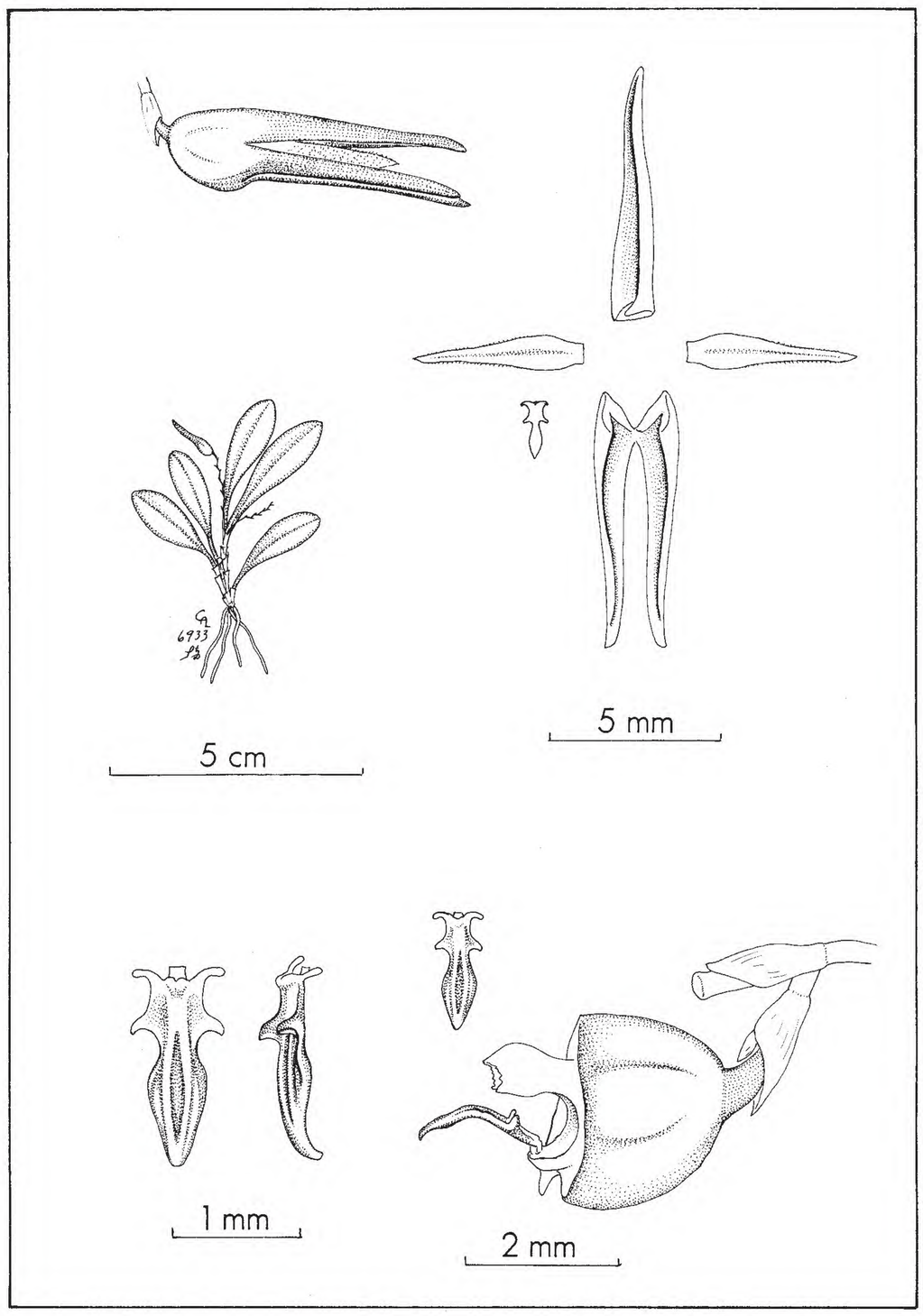


Fig. 131. Panmorphia megalophora

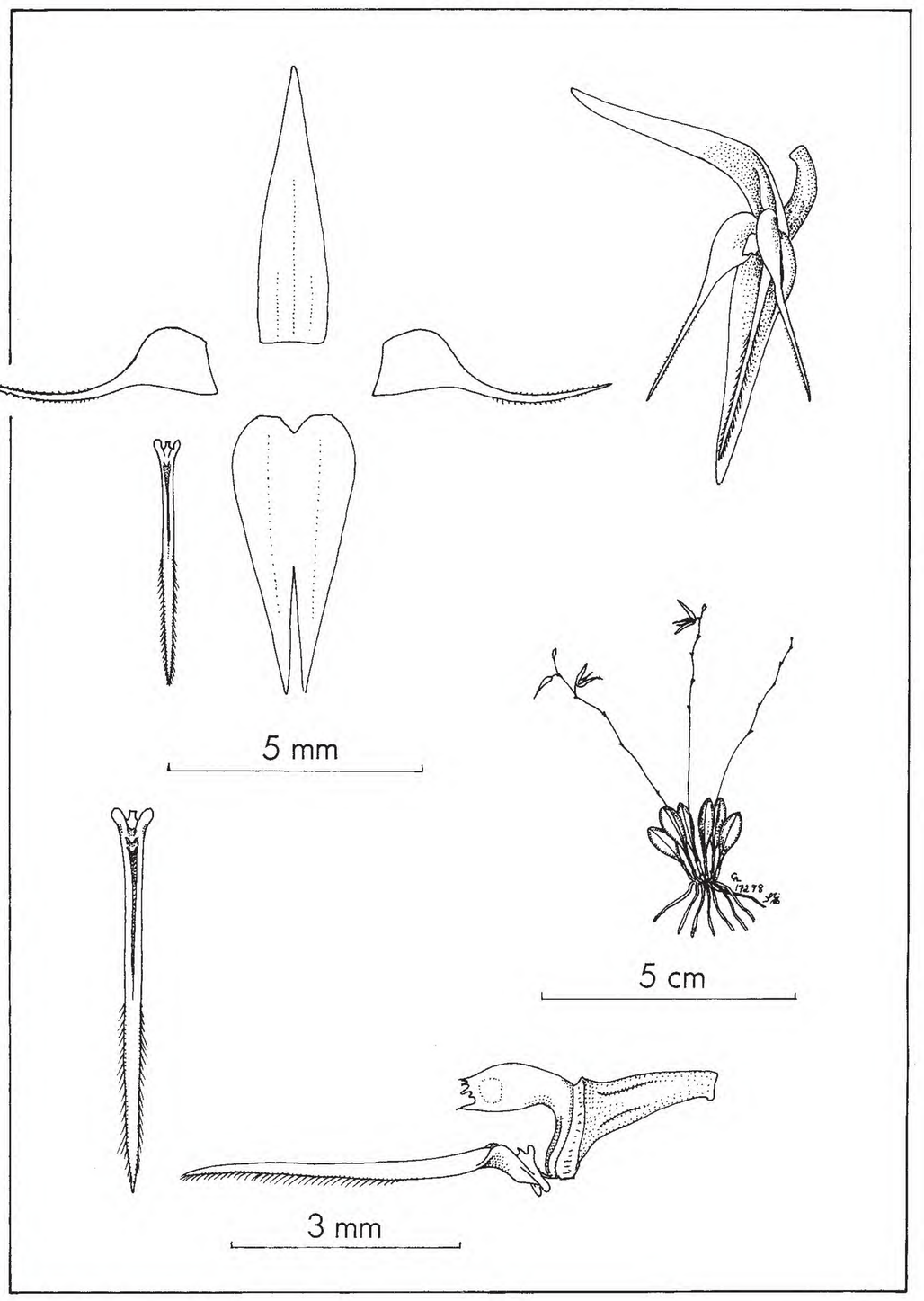


Fig. 132. Panmorphia milipeda

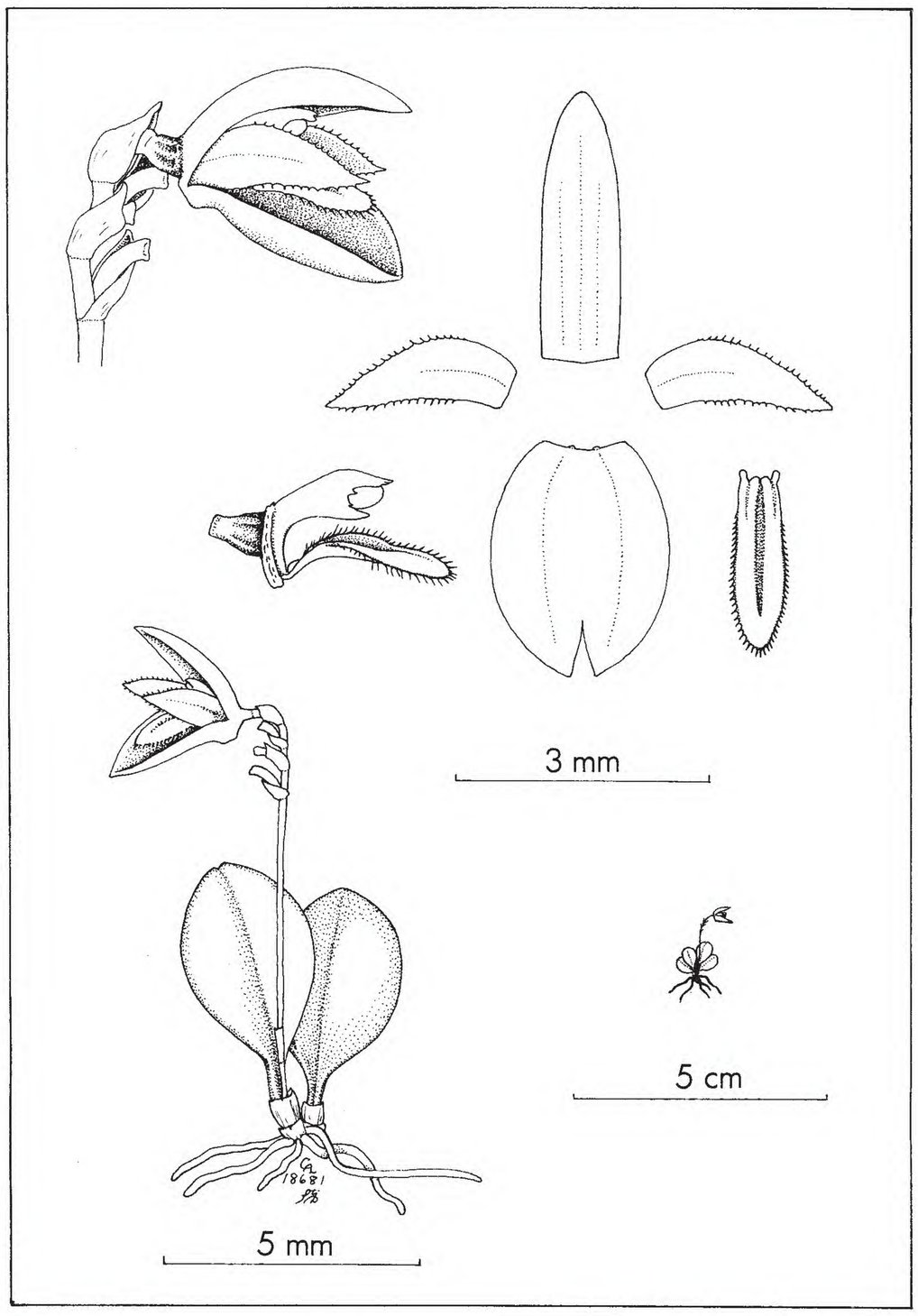


Fig. 133. Panmorphia minima

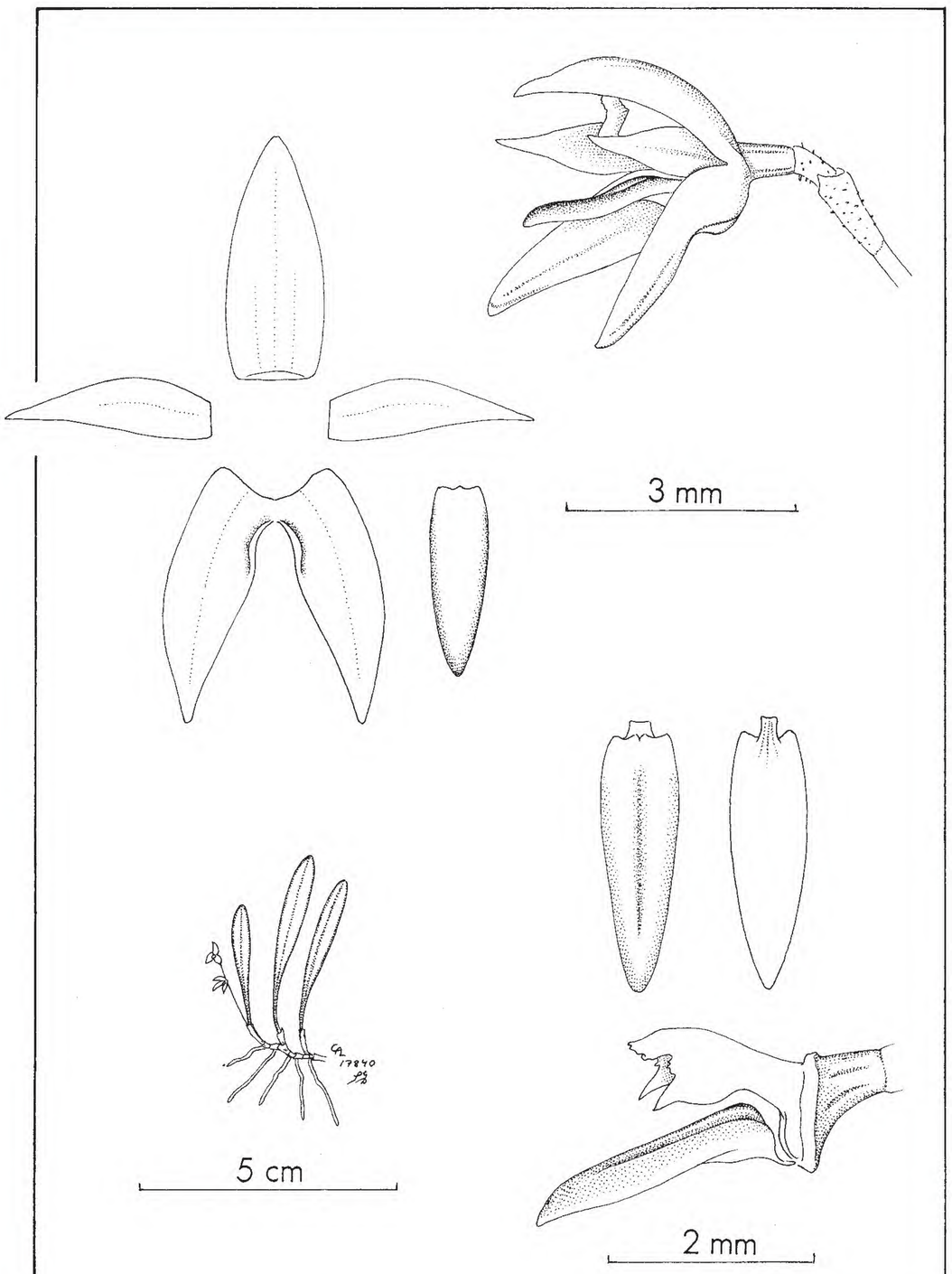


Fig. 134. Panmorphia minutalis

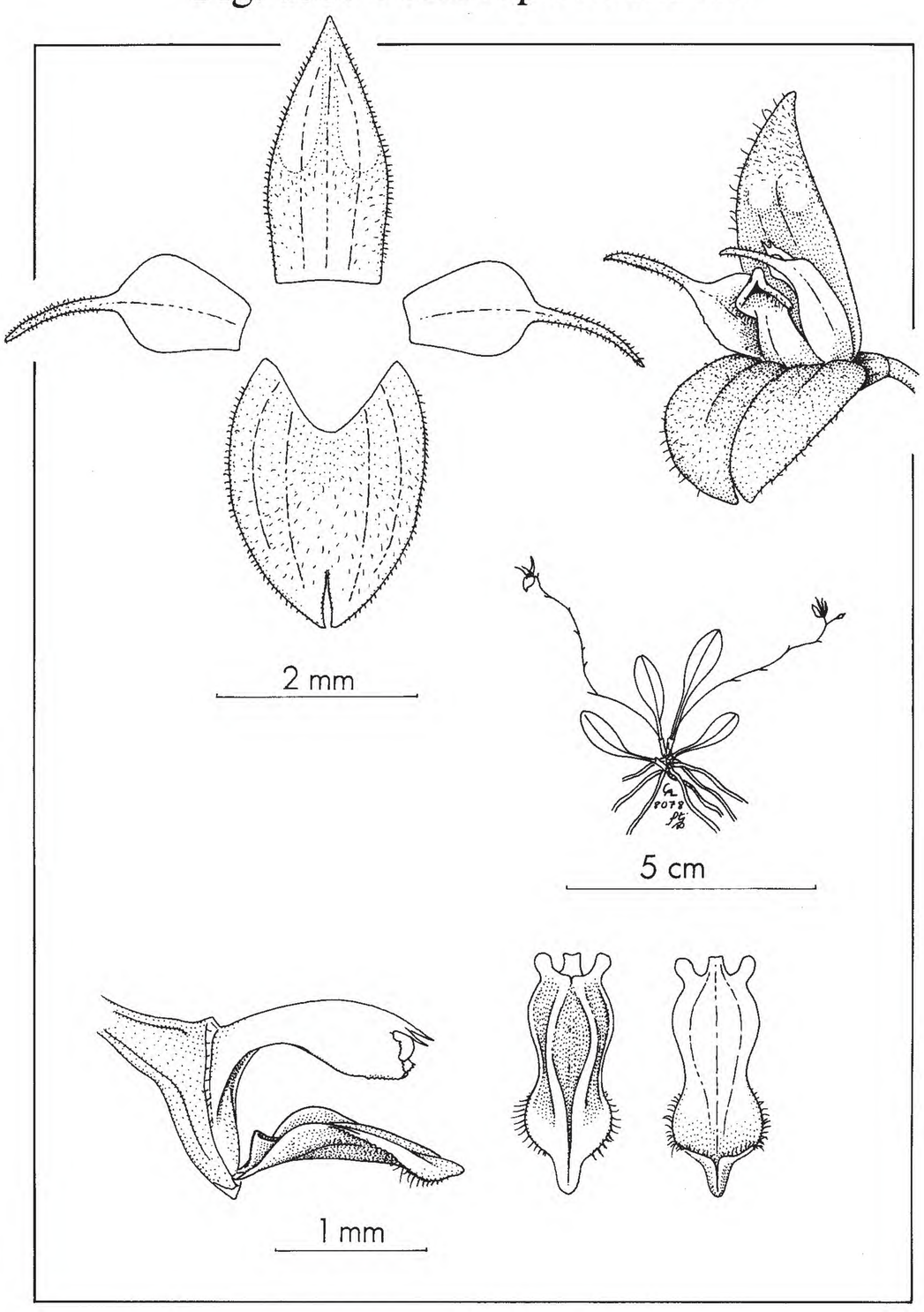


Fig. 135a. Panmorphia muricaudata

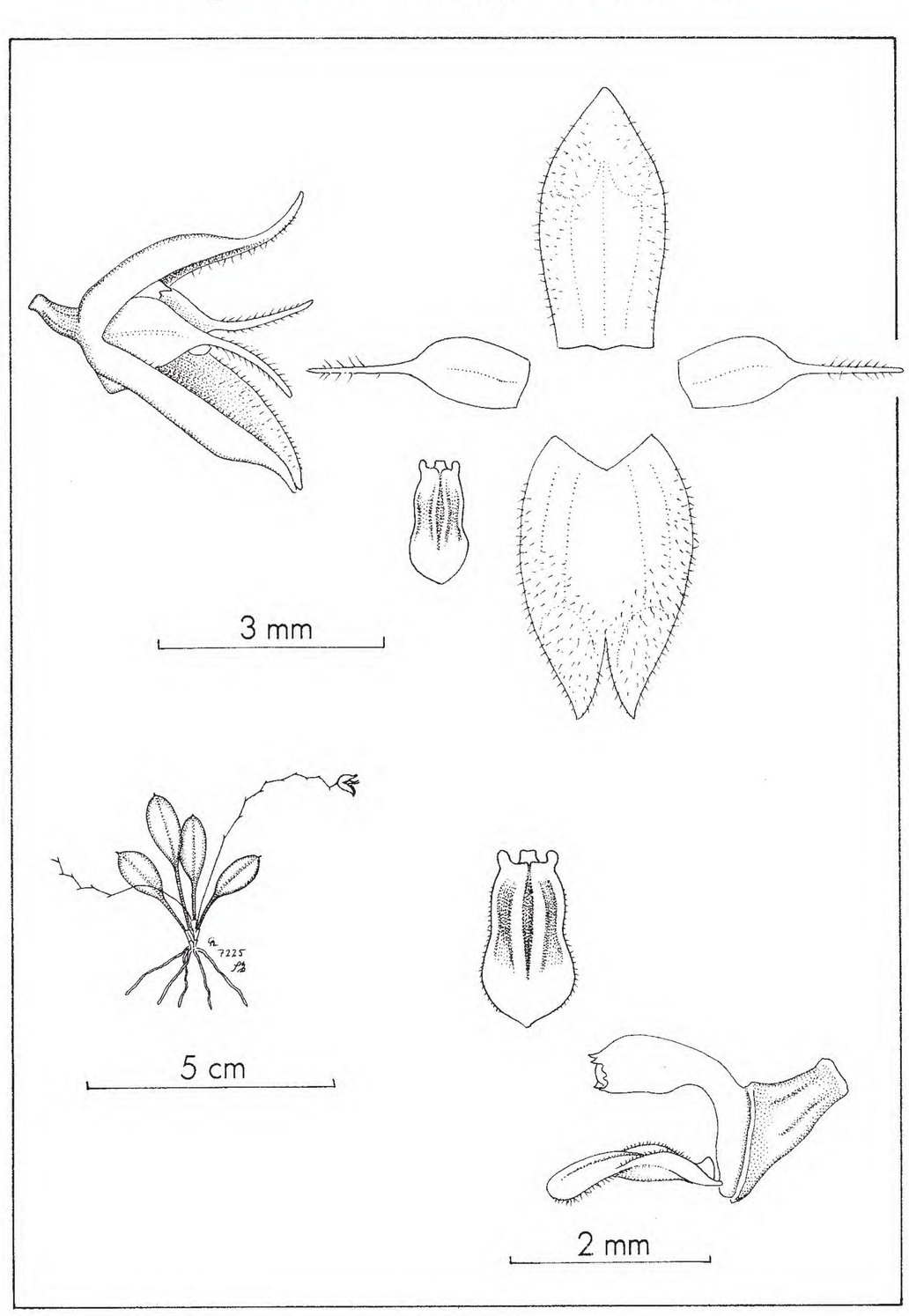


Fig. 135b. Panmorphia muricaudata

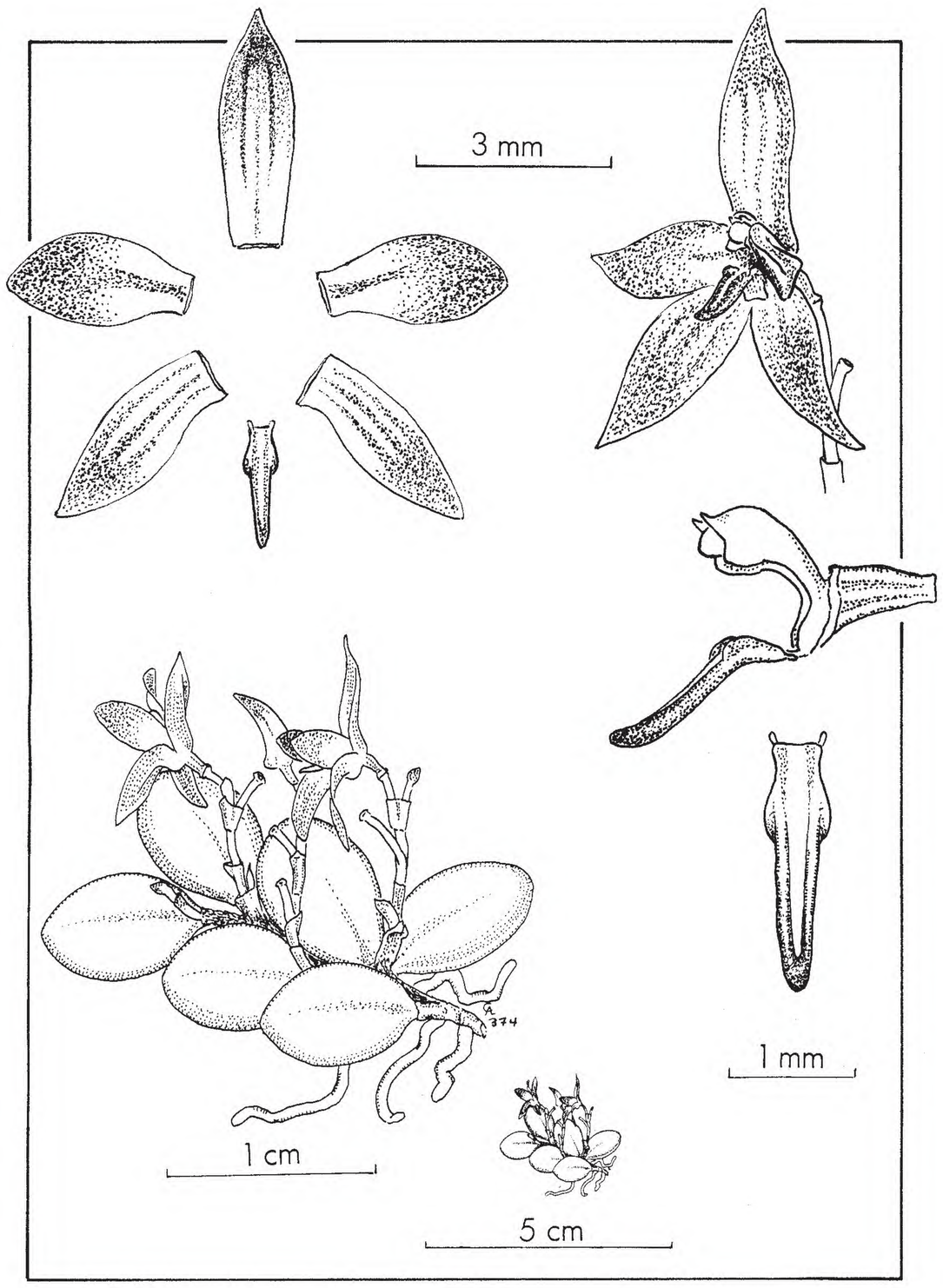


Fig. 136. Panmorphia nanifolia

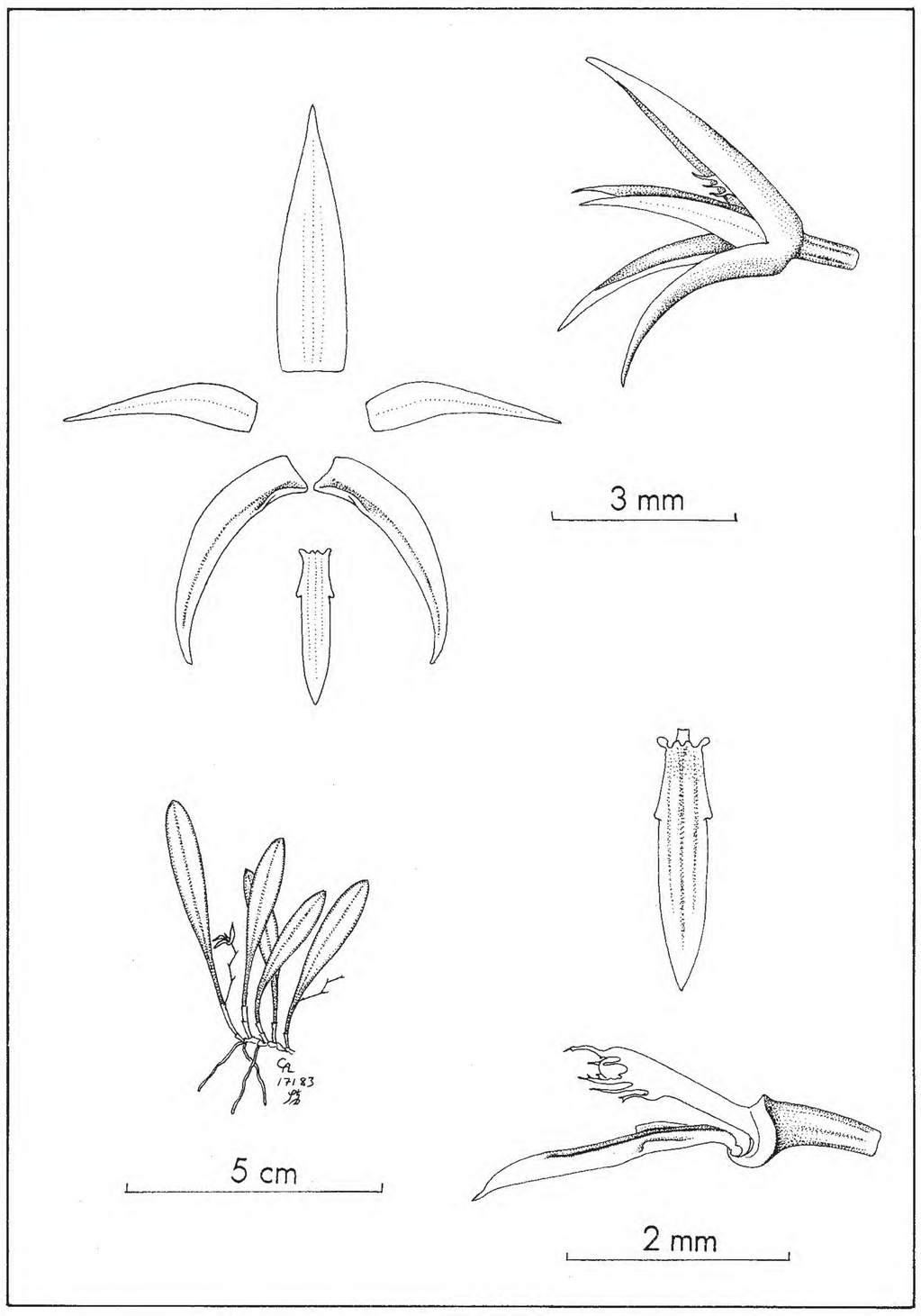


Fig. 137. Panmorphia oblanceolata

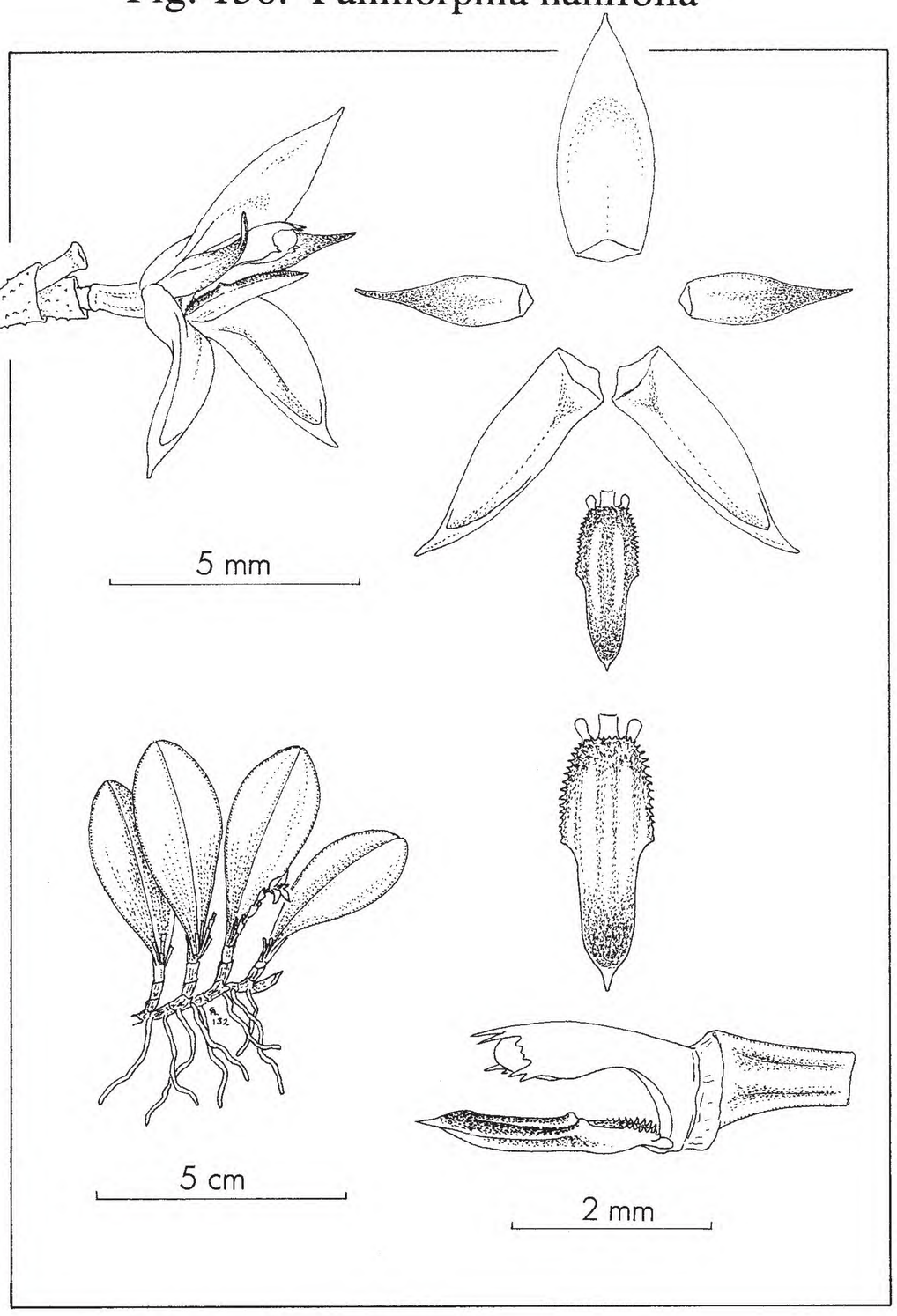


Fig. 138. Panmorphia pachyphyta

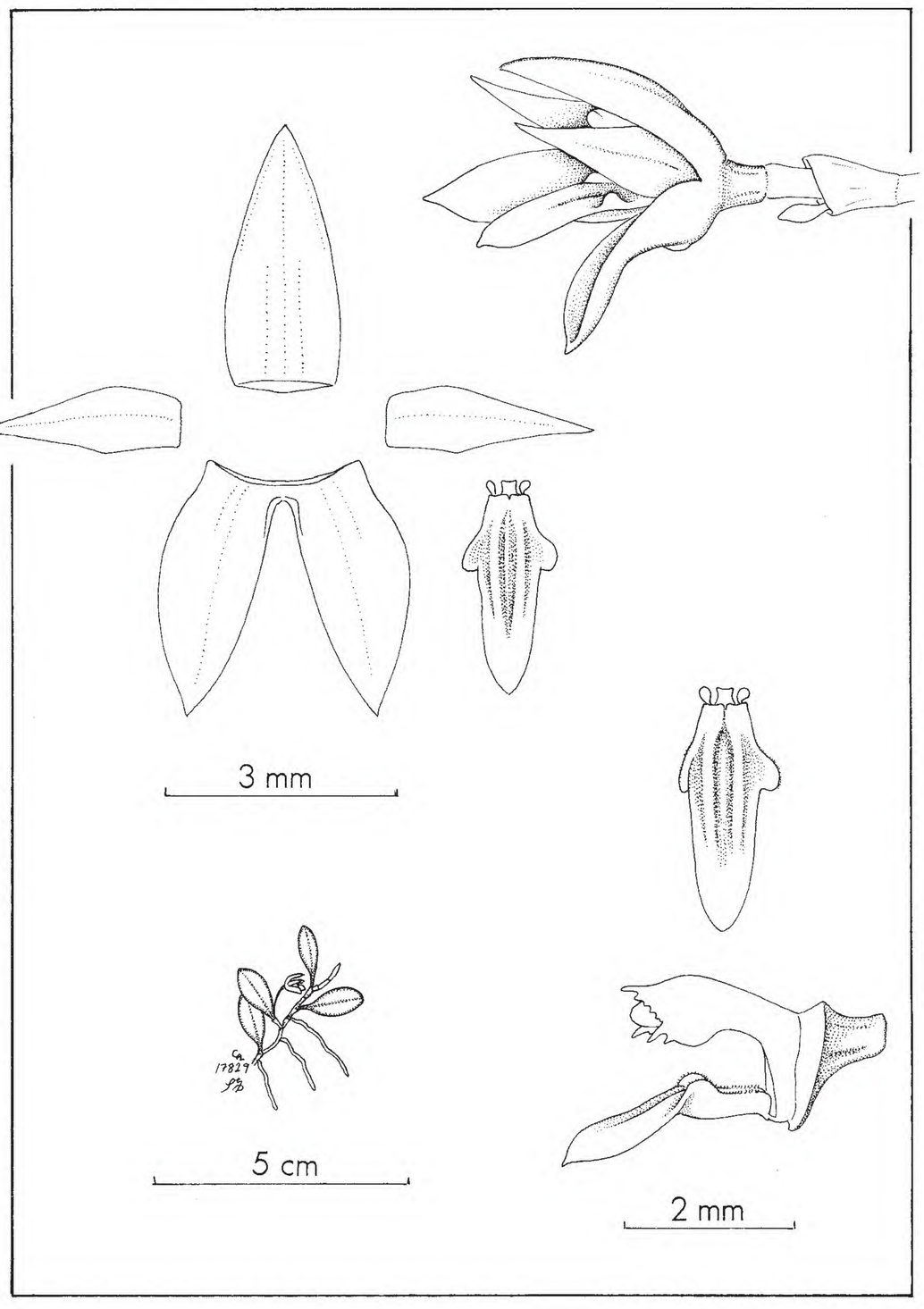


Fig. 139. Panmorphia polygonoides

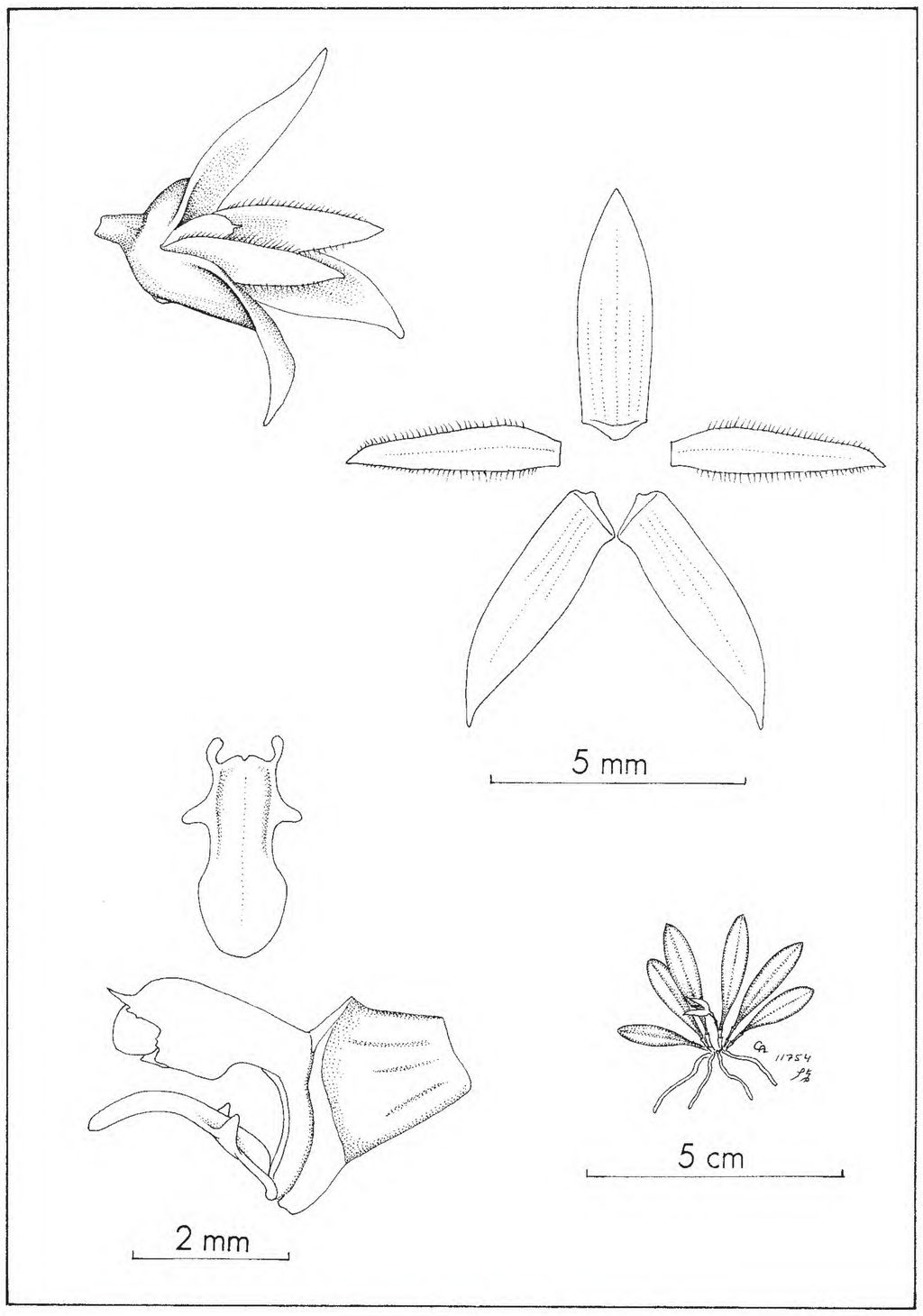


Fig. 140a. Panmorphia rabei

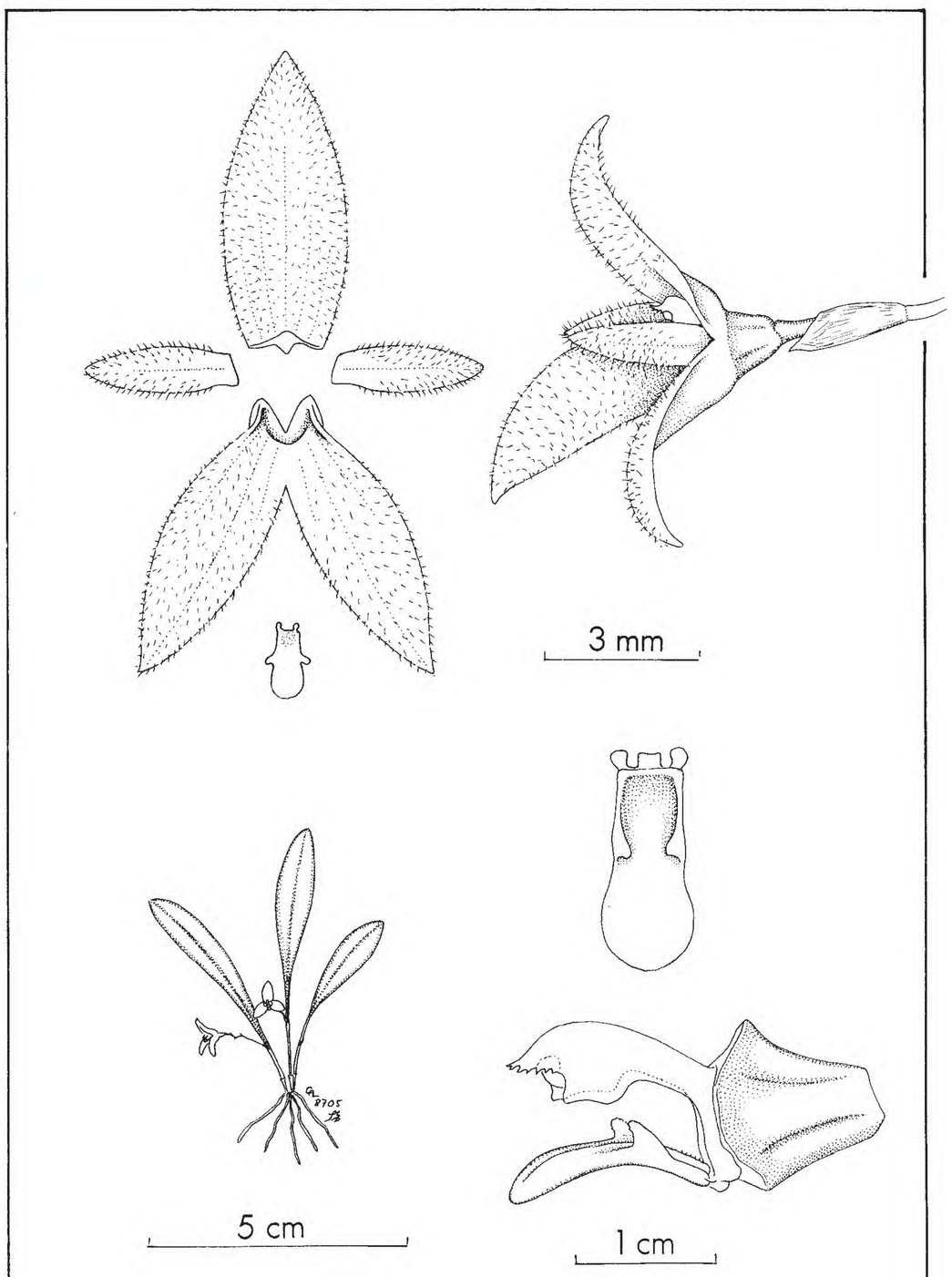


Fig. 140b. Panmorphia rabei

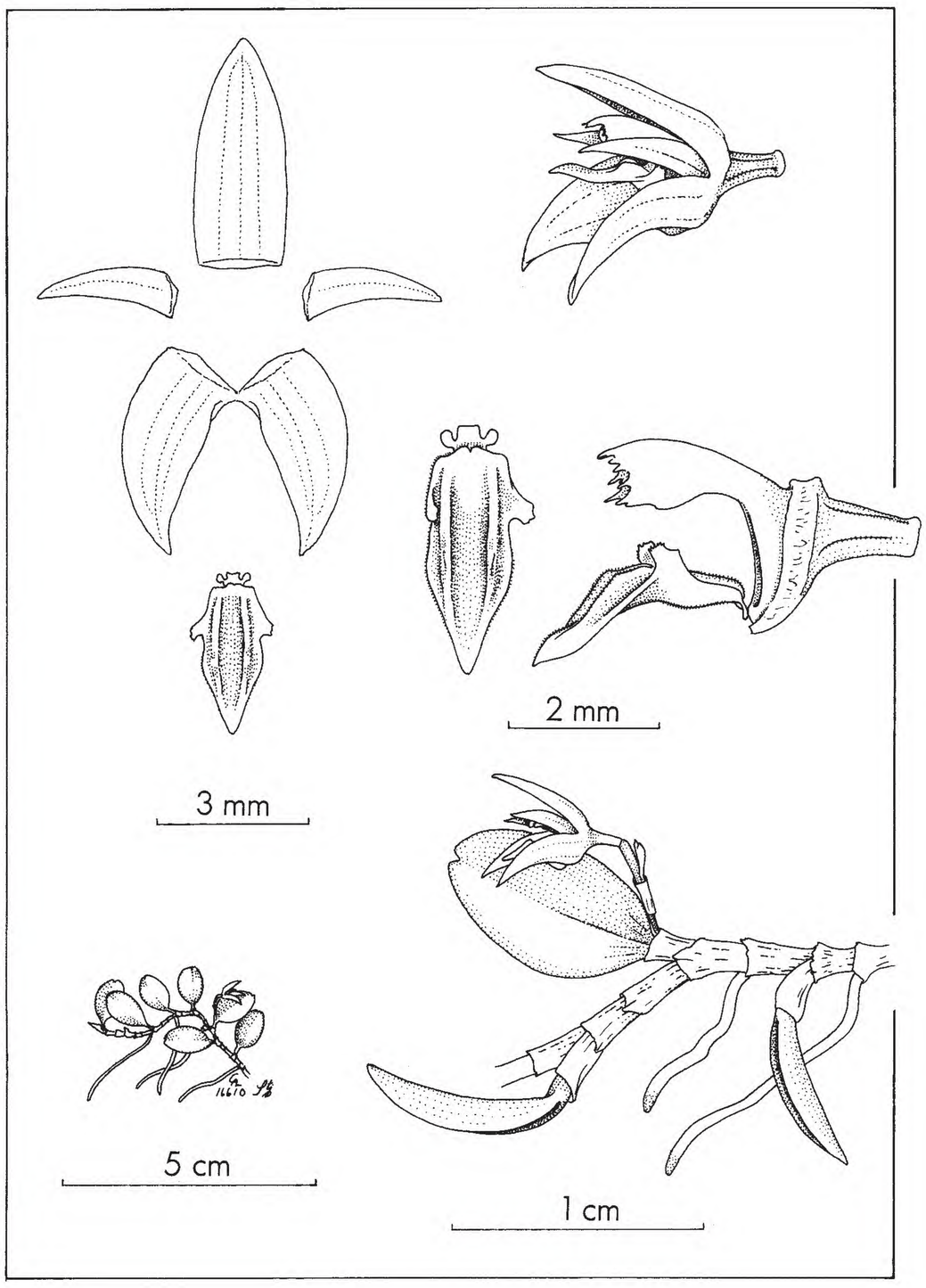


Fig. 141. Panmorphia reptilis

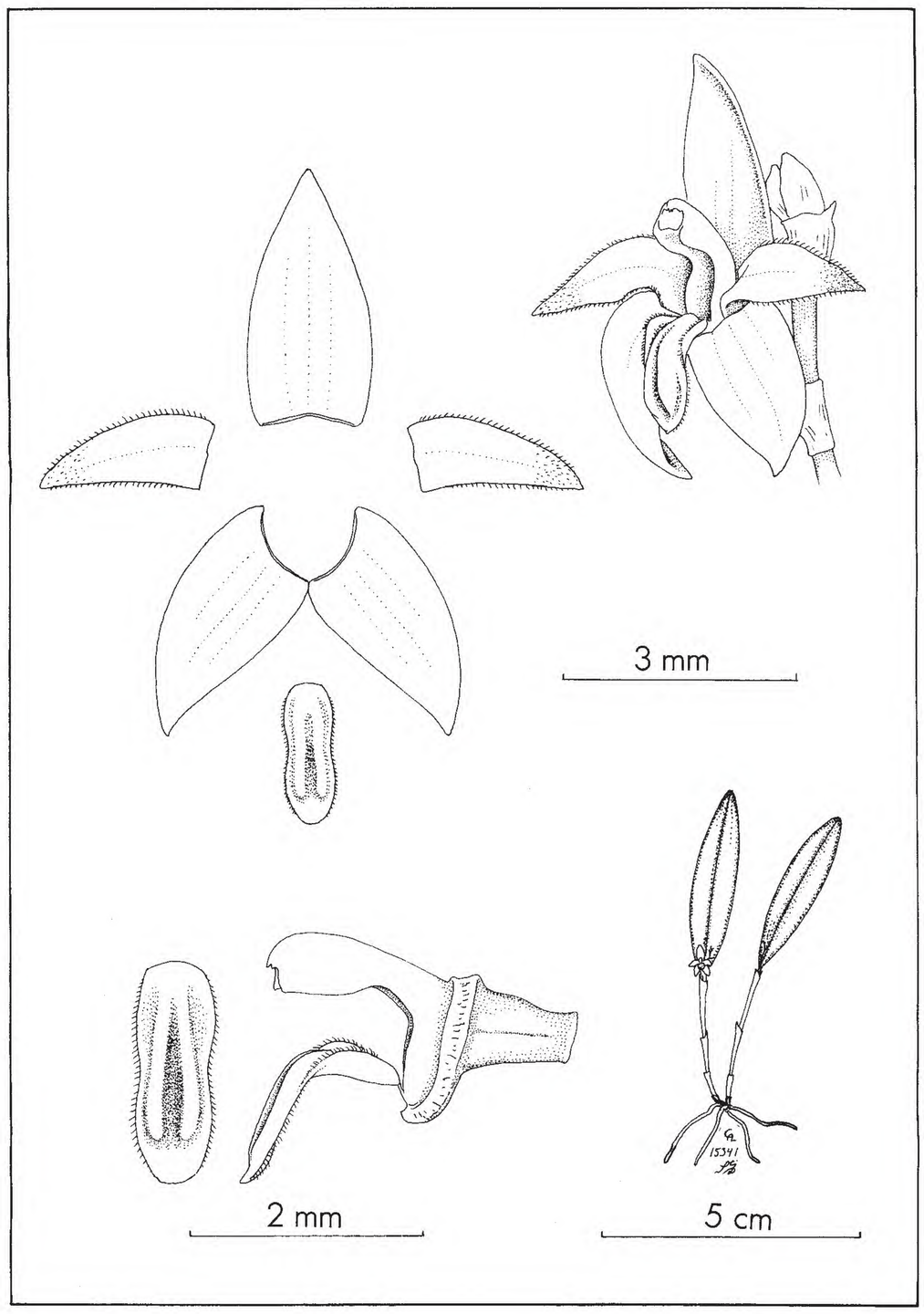


Fig. 142. Panmorphia ricii

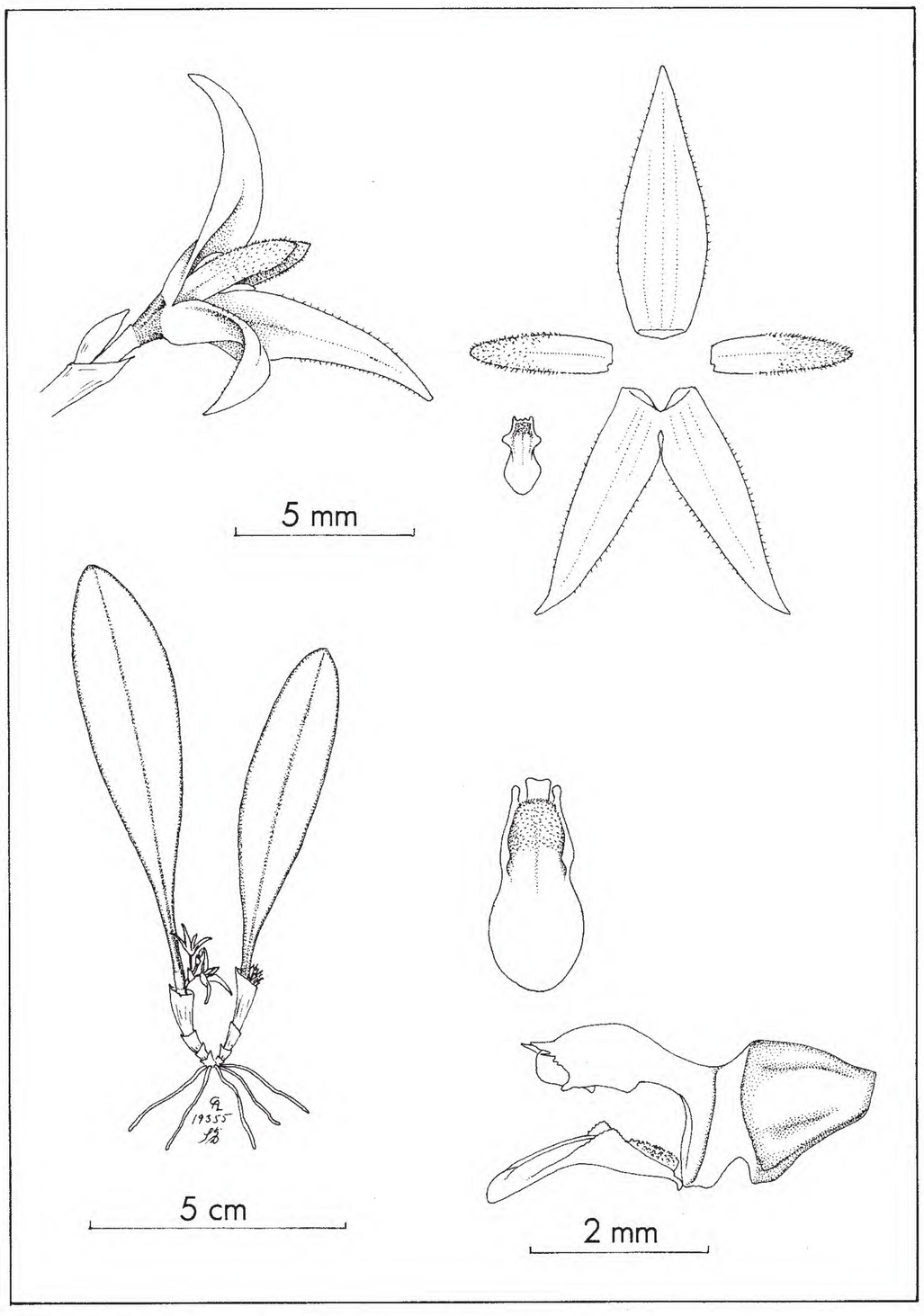


Fig. 143. Panmorphia sanchezii

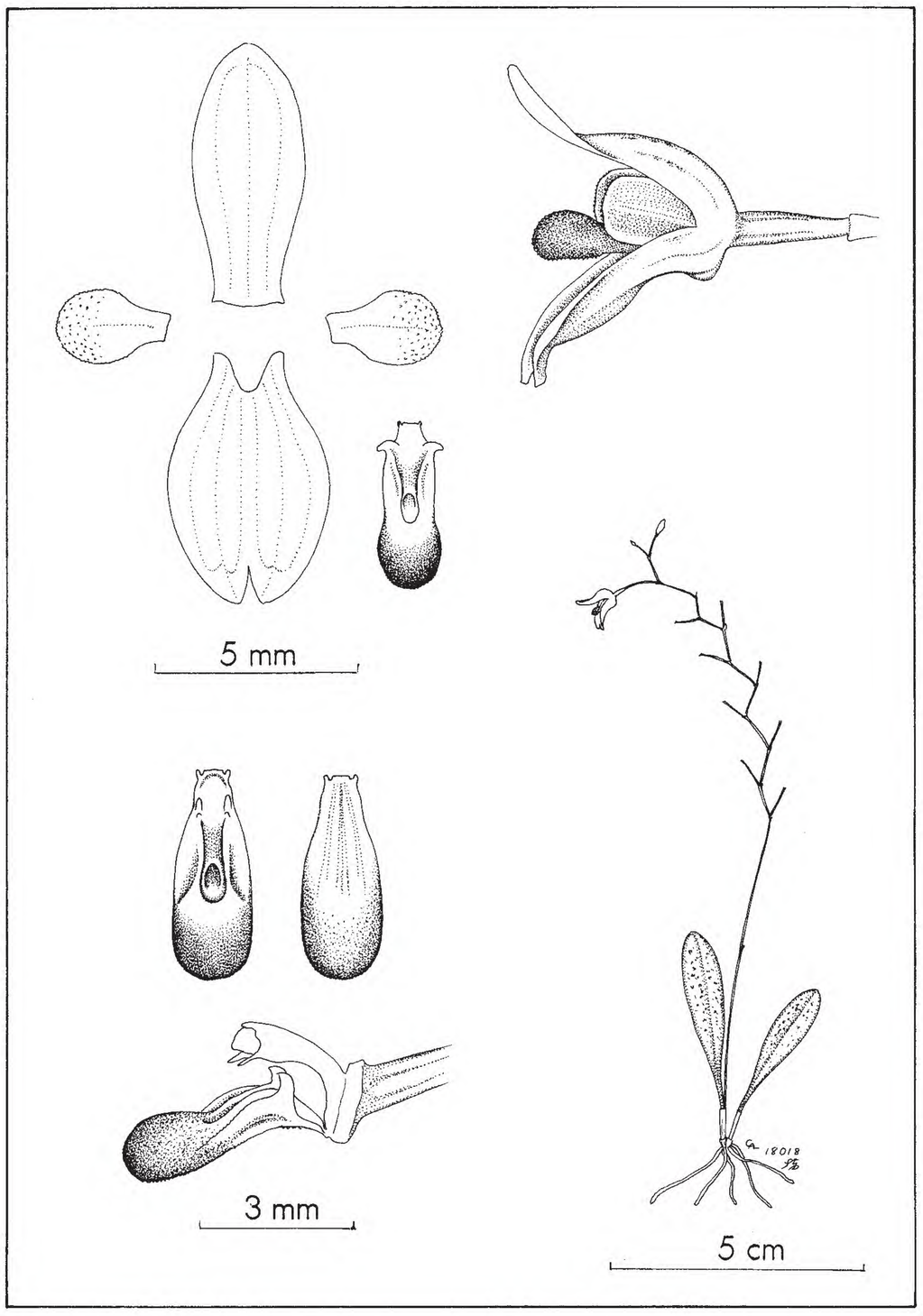


Fig. 144. Panmorphia seriata

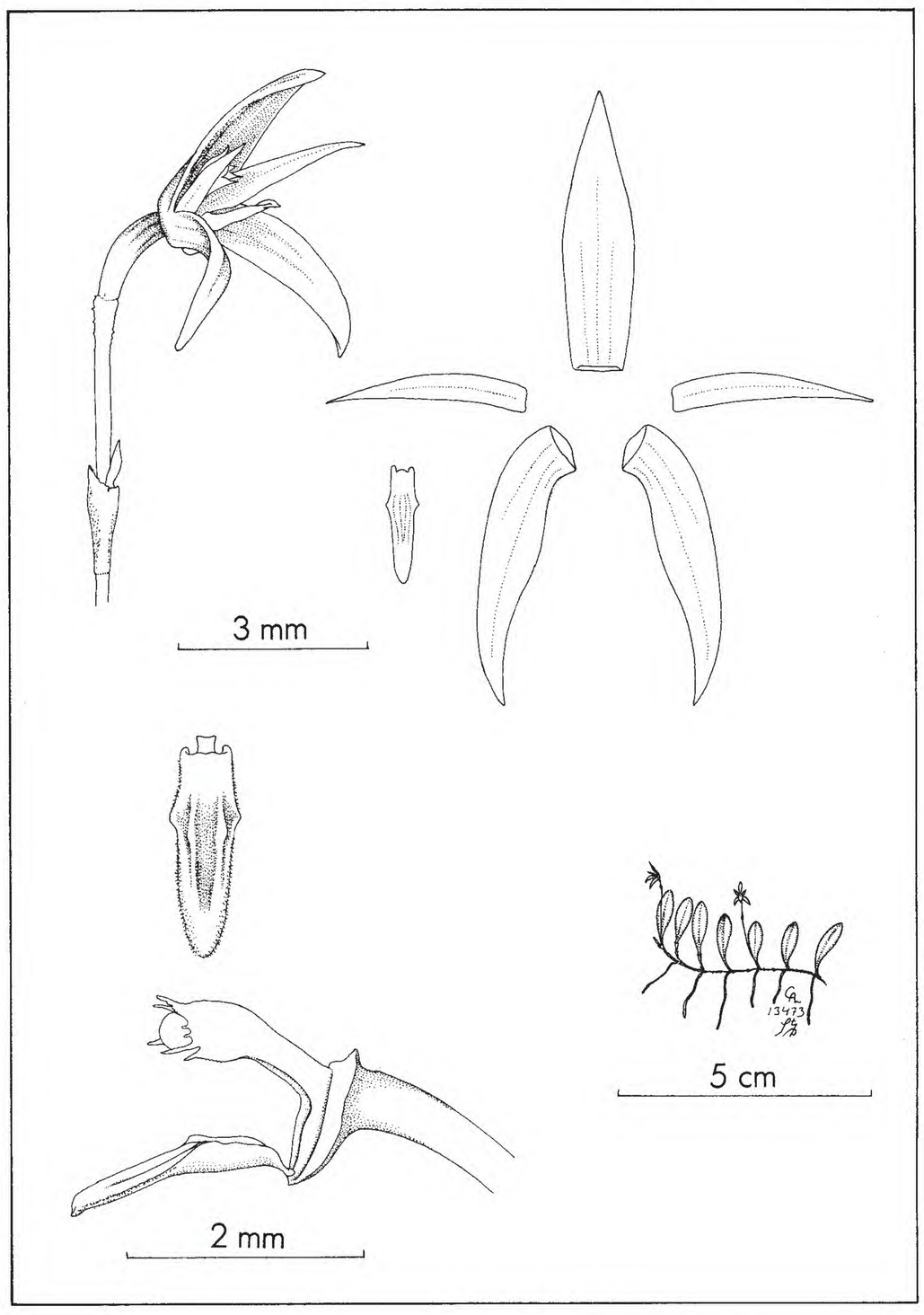


Fig. 145. Panmorphia sertularioides

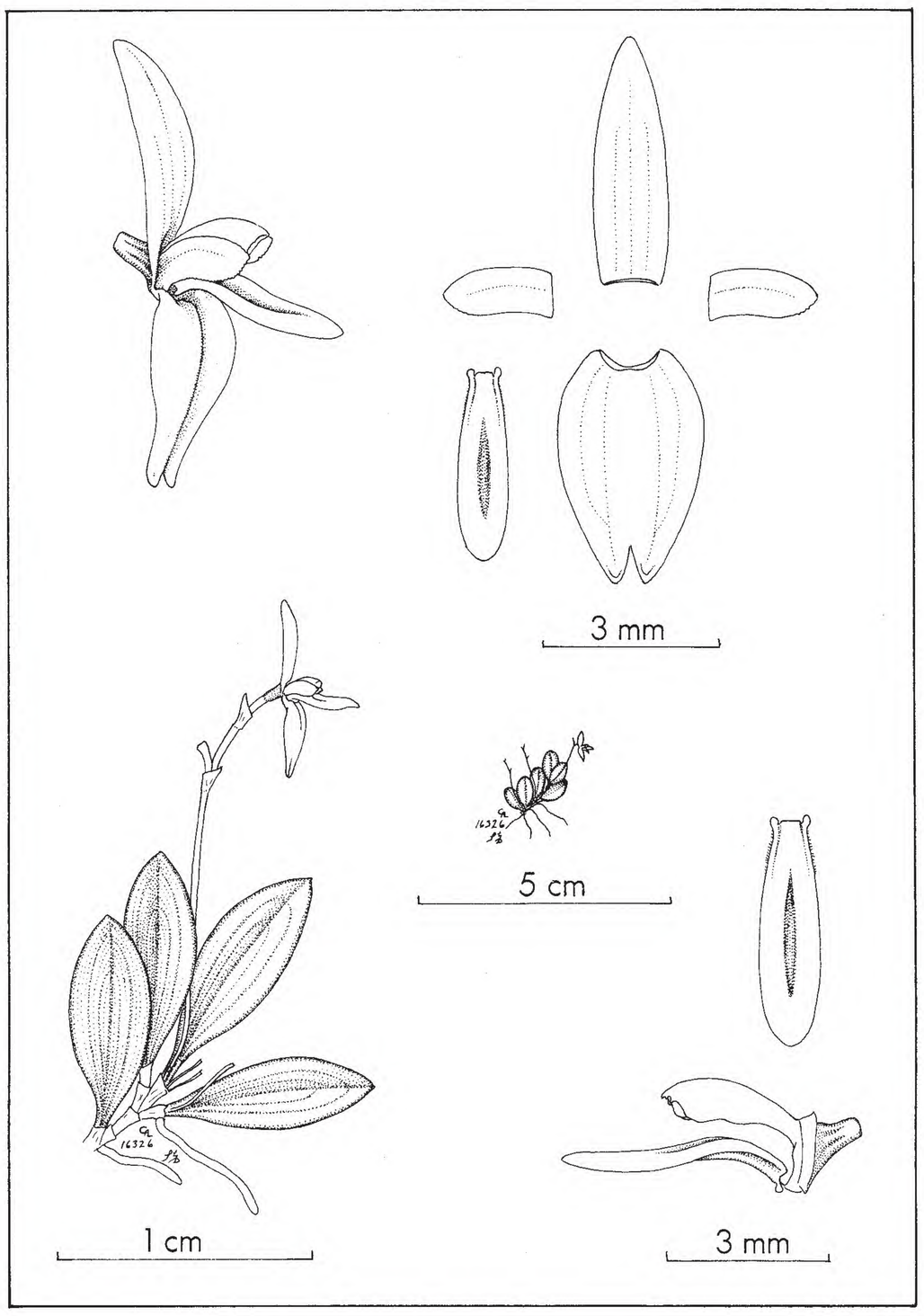


Fig. 146. Panmorphia steinbuchiae

PHLOEOPHILA

Phloeophila Hoehne & Schltr., Arch. Bot. São Paulo 1: 201, 1926.

Lectotype designated by Garay, 1974: 103: *Phloeophila paulensis* Hoehne & Schltr. Arch. Bot. São Paulo 1: 201, 1926. [=*Phloeophila nummularia* (Rchb.f.) Garay].

Ety.: From the Greek *phloiophilos*, "bark loving," referring to the creeping habit on bark.

Syn.: *Pleurothallis* subgen. *Acianthera* (Scheidw.) Luer subsect. *Phloeophilae* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 17, 1986.

Type: *Pleurothallis paulensis* Hoehne & Schltr.

Plants very small, epiphytic to lithophytic, repent; roots slender. Ramicauls markedly abbreviated, proportionately stout, suberect or ascending, enclosed with 1-3, imbricating sheaths. **Leaf** suberect to prone, thickly coriaceous, verrucose, elliptical to subcircular, obtuse, narrowed below to a subsessile base. **Inflorescence** a single flower proportionately large relative to the leaf; **sepals** fleshy, usually puberulent, the laterals connate at least to the middle; **petals** membranous, simple, acute to subacute; **lip** oblong, with obscure or obvious angles of lobes below the middle, usually verrucose, the base more or less truncate, hinged to the column-foot; **column** semiterete, shallowly winged, denticulate at the apex, the anther ventral, deciduous, the rostellum and stigma ventral, the pollinia 2, pyriform, naked.

Schlechter and Hoehne established this genus for a species with tiny rounded leaves that hugged the bark of the tree upon which they crept. His illustration of *Pleurothallis paulensis* Hoehne & Schltr. that accompanied the description is indistinguishable from the illustration published by Barbosa Rodrigues for *P. echinantha* Barb.Rodr., and the plant and flower are similar to those of the even earlier *P. nummularia* Rchb.f. from far off Cuba.

As treated here, this genus consists of only four species characterized by a prostrate rhizome with minute, thick, more or less circular, verrucose leaves, and single flowers as large as or larger than the leaf. Some species in other genera (*Areldia* Luer, *Barbosella* Schltr., *Incaea* Luer, *Panmorphia nanifolia* (Foldats) Luer, and *Specklinia* Lindl.) also produce little, round leaves. Dunsterville (Amer. Orchid Soc. Bull. 50: 662, 1961) called these plants "confetti-leaved," when he referred to a plant of *Barbosella orbicularis* Luer. The sepals are fleshy and pubescent, the laterals connate midway or nearly to the tip. The petals are simple and three-veined, and the margins of the lip below the middle are more or less erect.

Although *Phloeophila paulenis* [=*Phloeophila nummularia* (Rchb.f.) Luer], the type of the genus *Phloeophila* Hoehne & Schltr., had not been molecularly sequenced, morphologically incompatible taxa (i.e. *Luerella* Braas, and the species of *Ophidion* Luer) were included in the genus as proposed by Pridgeon and Chase (Pridgeon & M.W. Chase, 2001).

Species attributed to *Phloeophila*

Phloeophila nummularia (Rchb.f.) Garay.....Fig. 147a, 147b, 147c.
Phloeophila oricola (H.Stenzel) Luer.....Fig. 148.
Phloeophila peperomioides (Ames) Garay.....Fig. 149.
Phloeophila ursula (Luer & Hirtz) Luer.....Fig. 150.

Phloeophila nummularia (Rchb.f.) Garay, Orquideología 9: 118, 1974.

Bas.: *Pleurothallis nummularia* Rchb.f., Flora 48: 276, 1865.

Ety.: From the Latin *nummularius*, "like little coins," referring to the leaves.

Syn.: *Pleurothallis scalaris* Griseb., Cat. Pl. Cuba 259, 1866, nomen nudum.

Ety.: From the Latin *scalaris*, "like a ladder," referring to the habit.

Syn.: *Pleurothallis echinantha* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 22, 1882.

Ety.: From the Greek *echinanthos*, "hedgehog flower," referring to the spiculate sepals.

Syn.: *Physosiphon echinanthus* (Barb.Rodr.) Cogn., Fl. Bras. 3(4): 338, 1896.

Syn.: *Phloeophila echinantha* (Barb.Rodr.) Hoehne & Schltr., Arch. Bot. São Paulo 1: 200, 1926.

Syn.: *Phloeophila paulensis* Hoehne & Schltr., Arch. Bot. São Paulo 1: 201, 1926.
Ety.: Named for the state of São Paulo where the species was collected.

Syn.: *Pleurothallis paulensis* (Hoehne & Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 17, 1986.

Syn.: *Specklinia nummularia* (Rchb.f.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 262, 2004.

Plant small, epiphytic, repent, up to ca. 5 cm long forming mats of overlapping leaves; rhizome stout, creeping, 1.5-2 mm long between ramicauls, sheaths spiculate; roots comparatively thick. Ramicauls horizontal, stout, less than 1 mm long, enclosed by 2 tubular, more or less spiculate sheaths. **Leaf** prostrate, distichous, green above, purple beneath, verrucose, thickly coriaceous, broadly elliptical to subcircular, obtuse to rounded at the apex, 4-5 mm long, 3-3.5 mm wide, rounded below or broadly cuneate into a petiole less than 0.5 mm long. **Inflorescence** a single flower borne by an erect, sparsely pubescent peduncle 2-8 mm long, from the apex of the ramicaul; floral bract infundibular, sparsely pubescent-spiculate, 2-3 mm long; pedicels 0.5-4 mm long; ovary spiculate, 1.5 mm long; **sepals** fleshy, red-pubescent externally, the dorsal sepal yellow with purple along the veins, ovate, subacute, 6 mm long, 2-3.5 mm wide, 3-veined, connate to the lateral sepals for 2 mm, the lateral sepals purple, connate 3 mm into a bifid, ovoid, concave lamina with obtuse, apiculate apices, each sepal 7 mm long, 3 mm wide; **petals** white, elliptical-oblong, subacute to acute, 4 mm long, 1 mm wide, 3-veined; **lip** white, spotted with red-purple, oblong-subtrilobed, 4.5 mm long, 2 mm wide, the lateral lobes low, erect, erose, obtuse, below the middle, the anterior lobe minutely verrucose, with the apex rounded, the disc with a pair of low, longitudinal calli through the middle third, the base truncate, hinged to the column-foot; **column** semiterete, 3 mm long, bidentate at the apex, the anther and stigma ventral, the foot 1-1.5 mm long.

CUBA: **Oriente**: near Monte Verde, Jan.-July 1859, *C. Wright 1513* (Holotype: W; Isotypes: AMES, BR, K), C. Luer illustr. 18800. **Holguín**: Sierra Cristal, southern slope, 29 Dec. 1955, *Bro. Alain & M. López F. 4673, 4807* (HAC, HAJB).
ECUADOR: **Zamora-Chinchipe**: on trunk of large tree in seasonally dry hill near Tena. alt. 800 m, Feb. 2003, *A. Hirtz, N. & S. Hirtz 8515* (MO).
BOLIVIA: **La Paz**: Larecaja; on trunk of large tree in seasonally humid valley above Tipuani, collected in Aug. 1991, C. Luer et al., flowered in cultivation in San Francisco, CA, by *W. Teague 167* (MO), C. Luer illustr. 16343.
BRAZIL: **Rio de Janeiro**: Serra do Mar, near Rodeio, *J.B. Rodrigues s.n.* (holotype of *Pleurothallis echinantha*: Rodrigues's illustr.); Morro Querimado, *Glaziou 3819* (BR). **São Paulo**: Estação Biologica do Alto da Serra, Feb. 1919, *F.C. Hoehne s.n.* (holotype of *Phloeophila paulensis* destroyed at B, lectotype: SP 2998).

This widely distributed. little species creeps on the rough bark of the trunks of trees in eastern Cuba, Ecuador, Bolivia, and southern Brazil, but no collection has been reported from Colombia or Peru. Tiny, rounded, minutely verrucose, prone leaves are produced alternately by a comparatively stout rhizome. The single, pubescent flower that emerges from near the apex of the short ramicaul is larger than the leaf. A short filament (the vestigial bud of a second flower) is present within the spiculate, floral bract. The pedicel and peduncle of the Ecuadorian collection are longer than those seen in other collections. The sepals are fleshy and pubescent externally; the dorsal sepal is shorter than the synsepal to which it is connate nearly half its length into a broad tube; the petals are narrow and acute; and the lip is merely oblong, but with a pair of low calli and low, ill-defined, marginal lobes on the lower third. Minor differences are easily explained as geographical variations.

The published illustration of the type of *Physosiphon echinanthus* [*Flora Brasiliensis* 3(4), plate 118, fig. 1, 1896] does not differ significantly from the illustration of the type of *Phloeophila paulensis* (Schlechter, 1926), the present illustration of the type of *Pleurothallis nummularia* [=*Phloeophila nummularia* (Rchb.f.) Garay], or illustrations of recent collections made in Ecuador and Bolivia. I fail to see the significant differences Schlechter enumerated between *Phloeophila echinantha* and *Phloeophila paulensis*. The trivial differences are fewer than those allowed in numerous species. The present illustration of *Phloeophila nummularia* was made from a hydrated flower of the holotype.

Phloeophila oricola (H.Stenzel) Luer, comb. nov.

Bas.: *Pleurothallis oricola* H.Stenzel, Willdenowia 32(1): 101, 2002.

Ety.: From the Latin *oricola*, "coast-dwelling," referring to the littoral habitat.

Plant very small, epiphytic, repent; rhizome proportionately stout, creeping, 1-2 mm long between ramicauls, enclosed by 3 acute, tubular sheaths; roots comparatively thick. Ramicauls ascending, stout, ca. 0.5 mm long, enclosed by 2 similar sheaths. **Leaf** appears to be suberect, thickly coriaceous, elliptic to obovate, acute, with minute warts on the dorsum with crenulate margin, 5-8 mm long, 2-4 mm wide, cuneate below into a subpetiolate base. **Inflorescence** 1-2 successive flowers borne by a suberect peduncle 2 mm long, from near the apex of the ramicaul; floral bract infundibular, 1 mm long; pedicel 1 mm long; ovary 1 mm long; **sepals** greenish white, dotted with dull purple, papillose-verrucose externally, the dorsal sepal narrowly ovate, acute, carinate, 4-4.5 mm long, 1 mm wide, 3-veined, connate basally to the lateral sepals, the lateral sepals connate into an ovate, shortly bifid synsepal, 4-4.5 mm long, 3 mm wide, 6-veined; **petals** white, with purple midvein, membranous, narrowly elliptic-obovate, acute, with serrate margins, 2.5 mm long, 0.7 mm wide, 1-veined; **lip** yellow, dotted with purple, fleshy, ovate-trilobed, 3.2 mm long, 2.5 mm wide across the lateral lobes expanded, verrucose-papillose above the middle with the apex rounded, the lateral lobes suberect, obtuse, with crenulate margins, the disc shallowly sulcate, the base narrowly unguiculate-truncate, hinged to the column-foot; **column** yellow, suffused with purple, semiterete, narrowly winged above the middle, 2 mm long, erose at the apex, the anther and stigma ventral, the foot 0.6 mm long.

CUBA: *Pinar del Río*: Guanahacabibes Peninsula, near Maria la Gorda, sea level, 15 May 2000, *Urquiola et al 9196* (Holotype: HAJB; Isotype: HPPR).

This little species is known from only one plant found growing on a tree trunk near the seacoast at the extreme western tip of the island. The accompanying description and illustration were made from the published description and illustration (Stenzel, 2002.) No material is available for illustration here. The plant is characterized by a shortly creeping rhizome; verrucose, ovate leaves; and a flower nearly as large as a leaf. The sepals are verrucose externally; the laterals are connate into a bifid lamina; the petals are narrowly obovate and serrulate; and the lip is verrucose and three-lobed below the middle.

The accompanying illustration is a modification of the drawing by Hagen Stenzel, published in *Willdenowia* 32: 101, 2002.

Phloeophila peperomioides (Ames) Garay, Orquideología 9: 118, 1974.

Bas.: *Pleurothallis peperomioides* Ames, Sched. Orch. 6: 64, 1923.

Ety.: Named for the resemblance to some species of *Peperomia* Ruiz & Pav.

Syn.: *Specklinia peperomioides* (Ames) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant very small, epiphytic, repent, the rhizome proportionately stout, branching, up to 10 cm long, 2-3 mm long between ramicauls, enclosed by 2, loose, ribbed, sparsely spiculate sheaths; roots proportionately thick. Ramicauls stout, suberect, ca. 1 mm long, enclosed by a tubular sheath similar to those of the rhizome. **Leaf** more or less prostrate, thickly coriaceous, orbicular, obtuse, 3 mm long, 3 mm wide to 5 mm long, 5 mm wide, the surface dark green, areolate-reticulate, the base rounded, contracted into the a petiole less than 1 mm long. **Inflorescence** a single flower borne from the petiole at the base of the leaf with a tubular, red-pubescent sheath 1-1.5 mm long, the peduncle less than 1 mm long; floral bract thin, fugacious; pedicel stout, 0.5 mm long; ovary red spiculate-pubescent, 1.5 mm long; **sepals** white, heavily suffused with dark red-purple, fleshy, non-spreading, spiculate externally, the dorsal sepal ovate, narrowly obtuse, 4 mm long, 1.5 mm wide, connate to the lateral sepals for 2 mm to for a broad tube, the lateral sepals connate 2 mm into a deeply concave, obovoid synsepal, 5 mm long, 5 mm broad partially expanded, the apices subacute, approximate; **petals** yellow-white, glabrous, elliptical, 2.5 mm long, 0.6 mm wide, with 3 yellow veins, the apex acute, minutely denticulate; **lip** white, spotted with purple, glabrous oblong, obtuse, 3.5 mm long, 1 mm wide, the disc with a pair of low, minutely verrucose calli above the middle, the base truncate, hinged to the base of the column; **column** narrowly winged, suffused with purple, 2.75 mm long, the foot ca. 1 mm long, with a pair of minute, ciliate calli, the anther, rostellum and stigma ventral.

COSTA RICA: **Cartago**: Peralta, *C.H. Lankester 465* (Holotype: AMES); El Muñeco, south of Navarro, alt. 1400 m, 8-9 Feb. 1924, *P.C. Standley 33889* (AMES); El Muñeco, Río Navarro, alt. 1400-1500 m, 6-7 Mar. 1926, *P.C. Standley & R. Torres 51764* (AMES); Cerro Cedral, alt. 2400 m, cultivated at Berkeley, *C. Horich s.n.* (AMES). Sine loc,, ca. 1867, *A. Endres 83* (W). Sine loc., collected by L. Glicenstein, flowered in cultivation 19 Sept. 1979, *C. Luer 4231* (SEL).
HONDURAS: north of Lake Yojoa, 22 Aug. 1951, *P. Kamb 2126* (AMES).
BELIZE: Cayo District, vicinity of Butterfly Falls, Hidden Valley, 27 Apr. 1998, *B. Sayers 98/642* (DBN, MO).

The tiny, round leaves of this species hug the surface of the bark of the host, and eventually form masses of branching rhizomes with overlapping leaves. Endres collected it about 1867, and declared that it was "exceedingly rare" in his notes and illustration preserved at W. The leaves are thickly coriaceous with the surface appearing diffusely wrinkled. A single, purple flower, as large as the leaf, is produced from near the base of the short petiole of the leaf. The sepals are spiculate externally and the laterals are semiconnate. The petals are elliptical, and lip is oblong and spotted.

Phloeophila ursula (Luer & Hirtz) Luer, comb. nov.

Bas.: *Pleurothallis ursula* Luer & Hirtz, Lindleyana 11: 193, 1996.

Ety.: From the Latin *ursula*, "a bear cub," in allusion to the pubescent vegetative and floral parts.

Syn.: *Specklinia ursula* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Plant small, epiphytic, repent, 10 or more cm long, appressed upon the substrate, the rhizome comparatively stout, 3-5 mm long between ramicauls, enclosed by 2 spiculate sheaths; roots slender. Ramicauls stout, 1 mm long, enclosed by a short, spiculate sheath. **Leaf** prostrate, thickly coriaceous, verrucose on the upper surface, broadly elliptical to suborbicular, 6-7.5 mm long, 5-6 mm wide, the base broadly cuneate into the sessile base. **Inflorescence** a single, proportionately large flower produced from the base of a leaf, the peduncle 2 mm long, enclosed by a spiculate sheath; floral bract spiculate, 2 mm long; pedicel 1.5 mm long; ovary densely pubescent, 1.5 mm long; **sepals** fleshy, purplish brown, dotted with dark purple, densely pubescent externally, the dorsal sepal narrowly elliptical, subacute, concave, 7 mm long, 2 mm wide, 3-veined, connate to the lateral sepals for 2 mm, the lateral sepals connate to near the middle, obovate, oblique, acute, 10 mm long, each 4 mm wide, 3-veined; **petals** yellow, glabrous, oblong, subacute, 3.5 mm long, 1 mm wide, 3-veined, minutely verrucose within toward the apex; **lip** brown, ovate-trilobed, 4.5 mm long, 1.5 mm wide, the anterior half ovate, denticulate, verrucose, the lateral lobes erect, rounded, below the middle, with a pair of low, verrucose calli extending from the bases of the lobes onto disc above the middle, the base truncate, hinged to the column-foot; **column** terete, 3 mm long, denticulate at the apex, the anther, rostellum and stigma ventral, the foot 2 mm long, minutely pubescent.

ECUADOR: **Morona-Santiago**: epiphytic in forest southeast of Sigsig near Chigüinda, alt. 1,600 m, 13 Jan. 1989, *C. Luer, J. Luer, P. Jesup & A. Jesup 13874* (Holotype: MO).

This coarse, little, creeping species is related to *Phloeophila nummularia*. Vegetatively the two species are similar with small, round, verrucose leaves that grow appressed to the mossy bark of trees. The rhizome, ramicaul, peduncle and pedicel are enclosed by spiculate sheaths. The fleshy flowers are about twice as large as those of *P. nummularia*, the lateral sepals being considerably larger than the dorsal sepal. The petals are minutely verrucose near the apex. The apical half of the lip is denticulate and verrucose.

PROCTORIA

Proctoria Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 258, 2004.

Ety.: Named for George Proctor, presently of San Juan, Puerto Rico, discoverer of the species.

Type: *Pleurothallis caymanensis* C.D.Adams.

A genus of one species endemic on Grand Cayman Island, the description of the species will suffice for the genus.

Proctoria caymanensis (C.D.Adams) Luer, Monogr. Syst. Bot. Missouri Bot. 95: 258, 2004.

Bas.: *Pleurothallis caymanensis* C.D.Adams, Orquideología 6: 146, 1971.

Ety.: Named for the Cayman Islands where the species was collected.

Plant small, epiphytic, shortly-repent with the rhizome stout, ca. 1 mm long between ramicauls; roots slender. Ramicauls erect, stout, 2-3 mm long, enclosed by a thin, tubular sheath. **Leaf** suberect, thickly coriaceous, canaliculate-concave, acute, acuminate at the apiculate tip, 6-15 mm long, 3-5 mm wide, with the base cuneate, sessile. **Inflorescence** a sublax, successively 2- to 3-flowered raceme, ca. 5 mm long borne by a slender peduncle 25-35 mm long, subtended a membranous spathe 1.5 mm long, from the ramicaul near the base of the leaf; floral bracts thin, 1.25 mm long; pedicels 0.4 mm long; ovary cellular-papillose, 0.75 mm long; **sepals** pale yellow-green with purple veins, glabrous, the dorsal sepal oblong-obovate, subacute to obtuse, 6.5 mm long, 2 mm wide, 3-veined, the lateral sepals connate into an elliptical-oblong, shortly bifid synsepal, 6 mm long, 3 mm wide, 6-veined, with the tips acute; **petals** translucent, broadly-elliptical to subcircular, broadly obtuse, obscurely retuse, with the margins microscopically erose, 1.8 mm long, 1.5 mm wide, 1-veined; **lip** light yellow, thick, oblong-trilobed, 2.25 mm long, 1.3 mm wide, the apex broadly rounded, with the sides minutely irregular, the lateral lobes on basal third, membranous, erect, rounded, the disc shallowly channeled between a pair of parallel, calli on the middle third, the base truncate, with a minute lobule at the corners, hinged to the tip of the column-foot; **column** semiterete, broadly winged and minutely denticulate above the middle, 1.8 mm long, the foot 1 mm long, the anther, rostellum and stigma ventral.

CAYMAN ISLANDS: Grand Cayman, southeast of Old Man Village, 9 June 1967, *G.R. Proctor 27983* (Holotype: IJ); Grand Cayman, southeast of Old Man Village, *W. Kings 250* (BM); High Rock Quarry road, 25 Apr. 1992, *G.R. Proctor 47850* (SJ, UPR); Old Man Bay, north side, epiphytic, alt. 8-10 ft., 13 Feb. 2000, *Frank Roulstone s.n.* (MO), C. Luer illustr. 19158.

This small species is the only pleurothallid orchid known to occur on one of the Cayman Islands. The shortly creeping rhizome produces short, erect, ramicauls with thick, canaliculate-concave, acuminate-apiculate leaves that are far surpassed by the slender peduncle of the inflorescence. Although this species has been long-isolated, the lip suggests a relationship to the species of *Acianthera* Scheidw.

Illustration: Fig. 151, herein, C. Luer illustr. 19158.

RONALDELLA

Ronaldella Luer, gen. nov.

Type: *Pleurothallis determannii* Luer, Selbyana 7: 117, 1982.

Ety.: Named for Ronald Determann, who collected this species.

Plantae repentes. Folia crassa brevicaulia. Pedunculus brevis. Synsepalum concavum. Labellum obcuneatum.

This genus of only two species known from Central America, northern South America and the Andes, is distinguished by a stout, repent rhizome; short, stout ramicauls; suberect to reclining, broadly elliptical, coriaceous leaves; and a short peduncle. The dorsal sepal is free from a concave synsepal; the petals are obovate; and the lip is obcuneat.

Ronaldella aryter (Luer) Luer, comb. nov.

Bas.: *Pleurothallis aryter* Luer, Selbyana 3: 54, 1976.

Ety.: From the Greek *aryter*, "a ladle, or a dipper," in allusion to the flower.

Syn.: *Anthereon aryter* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 252, 2001.

Syn.: *Pabstiella aryter* (Luer) F.Barros, Bradea 8(43): 296, 2002.

Syn.: *Specklinia aryter* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 258, 2004.

Plant small, epiphytic, repent; rhizome stout, 2-5 mm long between ramicauls; roots slender, along the rhizome. Ramicauls stout, suberect, 3-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, suberect to reclining, coriaceous, broadly elliptical, obtuse, 2-4.5 cm long, 1-2 cm wide, cuneate below into a petiole less than 1 mm long. **Inflorescence** an erect to pendent, lax, subflexuous, successively 2- to 6-flowered raceme, 1.5-2.5 cm long including the peduncle 5-8 mm long, borne laterally from the ramicaul; floral bracts thin, tubular, 2-2.5 mm long; pedicel 2-9 mm long; ovary 2-4 mm long; flowers resupinate to non-resupinate; **sepals** fleshy, yellow-green, speckled with purple, carinate and glabrous externally, cellular-spiculate within, the dorsal sepal narrowly oblong, acute, concave, 9-10 mm long, 2-2.5 mm wide, 3-veined, the lateral sepals connate into an ovate, concave, obtuse, synsepal, minutely bifid at the tip, 9-11.5 mm long, 6-7 mm wide; **petals** yellow, dotted with purple, glabrous, obovate, obtuse, 4 mm long, 1.5 mm wide, 3-veined; **lip** yellow with purple dots and spicules, obcuneate, obtriangular, broadly obtuse at the apex, 4-4.5 mm long, 2-3 mm wide above the middle, the disc with a pair of minutely spiculate calli on the middle third, shallowly channeled between, the base narrowly truncate, hinged to the column-foot; **column** yellow, suffused with purple, semiterete, 4 mm long, longitudinally winged with the margins minutely denticulate, cucullate at the apex, the foot 2 mm long, the anther and stigma ventral.

PERU: **Huánuco**: south of Tingo Maria, flowered in cultivation 31 July 1976, *F. Fuchs, Jr. s.n.* (Holotype: SEL), C. Luer illustr. 1037.
COLOMBIA: **Antioquia**: Coquita de Dabeiba, collected by H. Angarita, cultivated by M. & O. Robledo at La Ceja, 9 Apr. 1988, *C. Luer 13095* (MO).
COSTA RICA: **Cartago**: near Fajardo bridge, ca. 1870, *A. Endres 11* (W). Without locality, collected by H.H. Morgan, flowered in cultivation 27 Jan. 1975, *C. Luer 1037A* (SEL).

This uncommon species is known from widely separated stations in the Andes and Central America. Endres recorded it from Costa Rica ca. 1870 with an illustration and the proposed name "ornithocephala" written on it by him, that is preserved at W. The species is characterized by comparatively large, short-stemmed, elliptical leaves borne by a stout, creeping rhizome. The flowers are produced in a short, loose, successively flowered raceme that sometimes arches to bear the flowers resupinate in a pendent raceme. The cup-like synsepal is then uppermost with the narrow middle sepal pointing downward. The lip is obcuneate with purple spicules and carinae.

Illustration: Fig. 152a, 152b, herein, C. Luer illustr. 1037 and 13095.

Ronaldella determannii (Luer) Luer, comb. nov.

Bas.: *Pleurothallis determannii* Luer, Selbyana 7: 117, 1982.
Ety.: Named for its collector, Ronald Determann, presently curator of the Atlanta Botanical Garden.

Syn.: *Anthereon determannii* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 252, 2001.
Syn.: *Pabstiella determannii* (Luer) F.Barros, Bradea 8(43): 296, 2002.
Syn.: *Specklinia determannii* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, repent; rhizome stout, 1-3 mm long between ramicauls; roots slender, along the rhizome. Ramicauls stout, suberect, 1-2.5 mm long, enclosed by a thin, tubular sheath. **Leaf** suberect to reclining, coriaceous, broadly elliptical, obtuse, 8-15 mm long, 6-8 mm wide, cuneate below into the sessile base. **Inflorescence** a suberect, single-flowered peduncle, 2-3 mm long, sometimes followed by a second flower, borne from the ramicaul; floral bracts thin, tubular, 2 mm long; pedicel 2-6 mm long; ovary 2-2.5 mm long; flowers resupinate; **sepals** translucent yellow with red-brown flecks, carinate and glabrous externally, pubescent within, the dorsal sepal narrowly ovate, acute, concave, 8-10 mm long, 2 mm wide, 3-veined, the lateral sepals connate into an ovoid, concave, obtuse, shortly acuminate synsepal, 9-11 mm long, 5-6 mm wide unexpanded; **petals** translucent cream, entire, obovate, obtuse, minutely apiculate, 3.5-4 mm long, 1.25 mm wide, 3-veined; **lip** yellow, long-pubescent, obcuneate, broadly obtuse, 4.75-5 mm long, 2.25-2.5 mm wide above the middle, the disc with a pair of low, longitudinal calli on the middle third, with an obtuse, conical callus at the base, the base narrowly truncate, hinged to the column-foot; **column** yellow, semiterete 4 mm long, longitudinally winged with the apex cucullate and the margins minutely denticulate, the foot 2 mm long, the anther and stigma ventral.

SURINAME: epiphytic in scrubby trees of Coesewijne Savanne, alt. 50 m, collected by M. Sepp, flowered in cultivation in Lelydorp, 24 Apr. 1981, *R. Determann 166* (Holotype: SEL), C. Luer illustr. 6324; epiphytic in savannah forest, Brownsberg, alt. 300 m, 29 Apr. 1981, flowered in cultivation at SEL, *R. Determann 209* (SEL).
ECUADOR: **Napo**: between La Cruz and Misahualli, alt. 400 m, collected by Alejandro Suarez, flowered in cultivation in Misahualli, 29 Mar. 1984, *C. Luer 9788* (MO); without locality, collected by D. D'Alessandro, cultivated by J & L Orchids, 792-388, Easton, CT, 23 Dec. 1992, *C. Luer 16528* (MO).

Ronaldella determannii occurs across northern South America from lowland, eastern Ecuador into the Guyanas, having been described from Suriname. It is characterized by short-stemmed, overlapping, little, elliptical leaves borne by a short, creeping rhizome. The flowers are produced singly with the long-pubescent, obcuneate lip within the synsepal with a prominent mentum with the column-foot.

Illustration: Fig. 153, herein, C. Luer illustr. 6324.

RUBELLIA

Rubellia Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 258, 2004.

Bas.: *Pleurothallis* subgen. *Rubellia* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 73, 1986.

Ety.: From the Latin *rubellus*, "a little red one," referring to the little red flower.

Type: *Pleurothallis rubella* Luer, Selbyana 3: 378, 1977.

A genus with one species distinguished by a circular, pubescent callus at the base of the lip, and a cylindrical column with an apical anther.

Rubellia rubella (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 258, 2004.

Bas.: *Pleurothallis rubella* Luer, Selbyana 3: 378, 1977.

Ety.: From the Latin *rubellus*, "a little red one," referring to the little red flower.

Syn.: *Platystele aurea* Garay, Orquideología 8: 182, 1973, nec *Pleurothallis aurea* Lindl., 1843, nec A.Rich. & Galeotti, 1845.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-15 mm long, mostly enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, narrowly obovate, long-petiolate, subacute, 2-4 cm long including the petiole, 4-6 mm wide, the base gradually narrowed into the petiole. **Inflorescence** a loose, flexuous, distichous, successively flowered raceme, up to 5 cm long, borne laterally from the ramicaul by a capillary peduncle; floral bracts 0.5 mm long; pedicels 2-3.5 mm long; ovary green with red stripes, 1 mm long; **sepals** membranous, glabrous, varying in color from yellow-orange to red, the dorsal sepal ovate, acute, concave, 3 mm long, 1.5 mm wide, 3-veined, the lateral sepals elliptical, acute, connate to above the middle, 3.25 mm long, 2 mm wide together, carinate; **petals** translucent, red at the tip, ovate, contracted near the middle into a narrow apex, 2.5 mm long, 1 mm wide; **lip** red-purple, elliptical-oblong, obtuse, ciliate, 2.75 mm long, 0.75 mm wide, the disc shallowly channeled, the base thick with a round, red-pubescent callus with a depressed center, flat on the end, inflexibly attached to the base the column; **column** erect, stout, cylindrical, 0.5 mm long, the anther apical, exposed, the stigma subapical, the foot obsolescent.

PANAMA: **Chiriquí**: Fortuna dam site, alt. ca. 1000 m, collected Oct. 1976 by *R.L. Dressler s.n.* (Holotype: SEL); vicinity of Fortuna Dam site, alt. 1400-1600 m, 15 Sept. 1977, *J.P. Folsom, R. & K. Dressler 5590* (MO).
COLOMBIA: **Quindío**: Calarcá, La Linea, cultivated by Marta Robledo at La Ceja, *R. Escobar 886* (holotype of *Platystele aurea*: AMES).
ECUADOR: **Pastaza**: collected near Tena, alt. 700 m, flowered in cultivation at Ecuagenera, 27 July 2004, *A. Hirtz 8948* (MO).

This species is rare, a red-flowered color variation having been collected in western Panama and a golden yellow color variation, in the Western Cordillera of Colombia. An Ecuadorian collection has yellow-orange sepals and a red-purple lip. The species is without close relatives. The habit of narrow leaves and a flexuous raceme are compatible with *Platystele* Schltr. and *Specklinia* Lindl., but the short, cylindrical column with an apical anther indicate otherwise. The long-ciliate lip is thickened at the base with a well-defined, circular, pubescent, umbilicated callus. The basal end of the lip is inflexibly attached to the base of a footless column.

Illustration: Icones-III, p. 74, 1986, Plate 37, C. Luer illustr. 389.

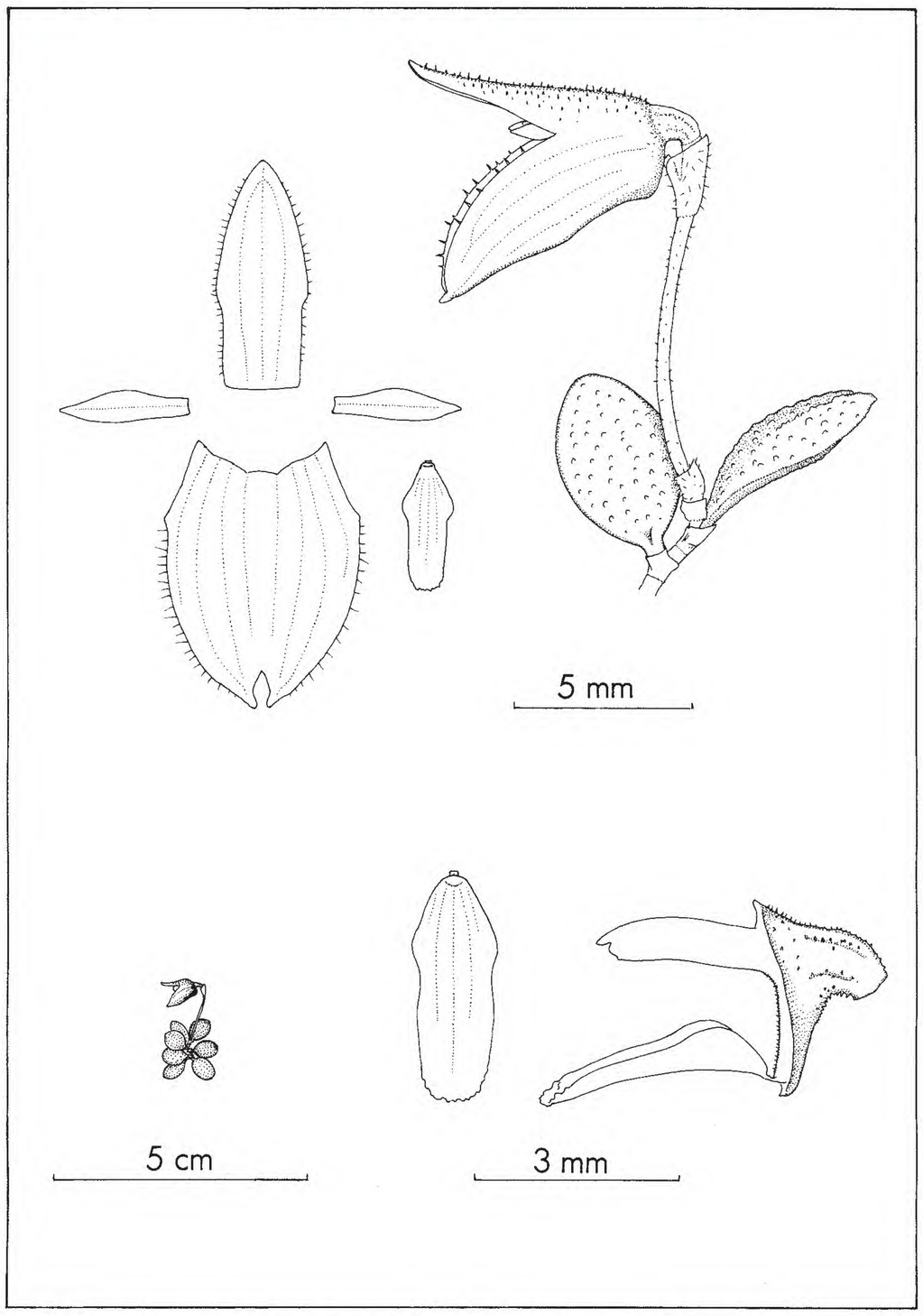


Fig. 147a. Phloeophila nummularia
Type, Cuba

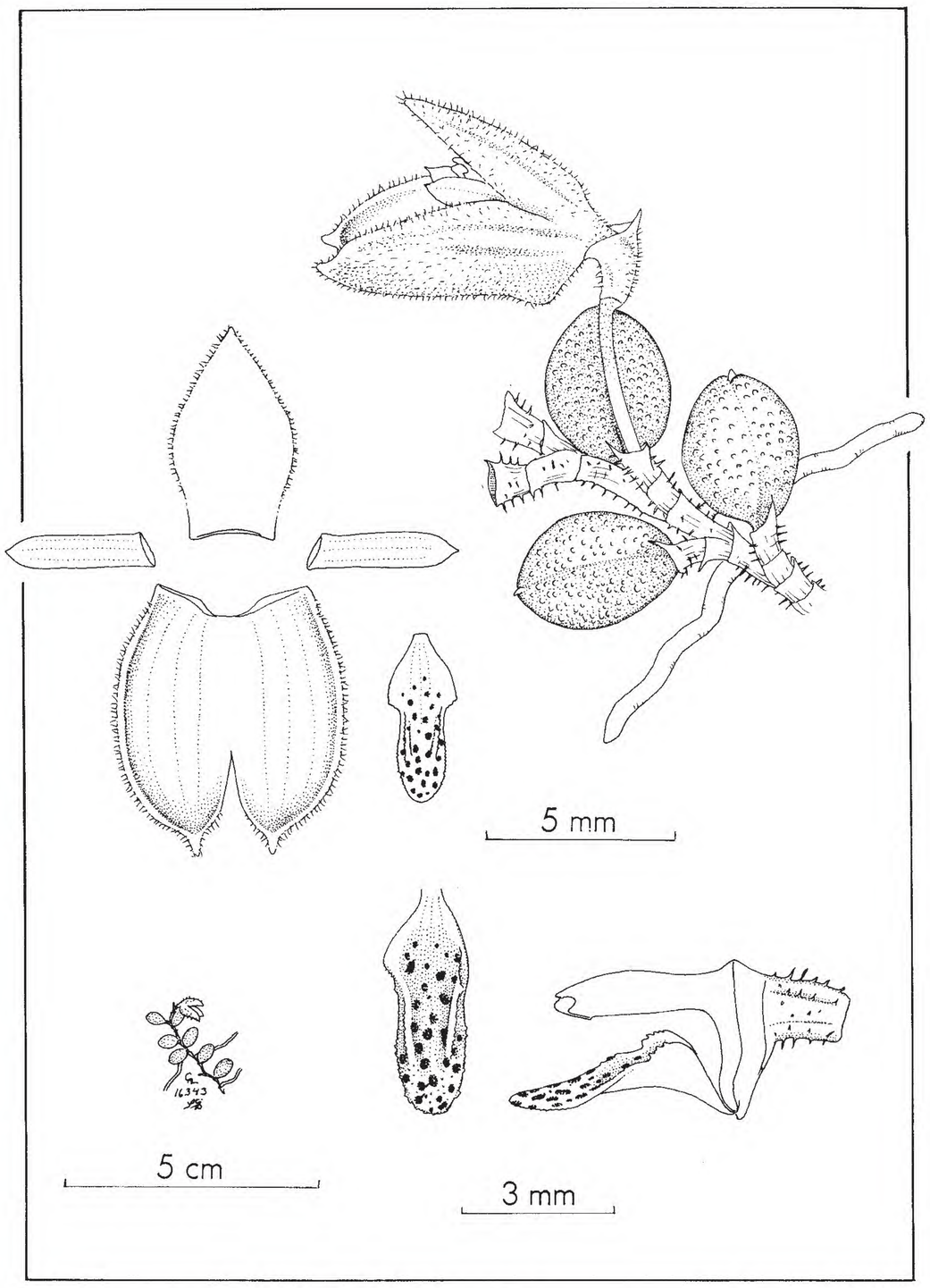


Fig. 147b. Phloeophila nummularia
Ecuador

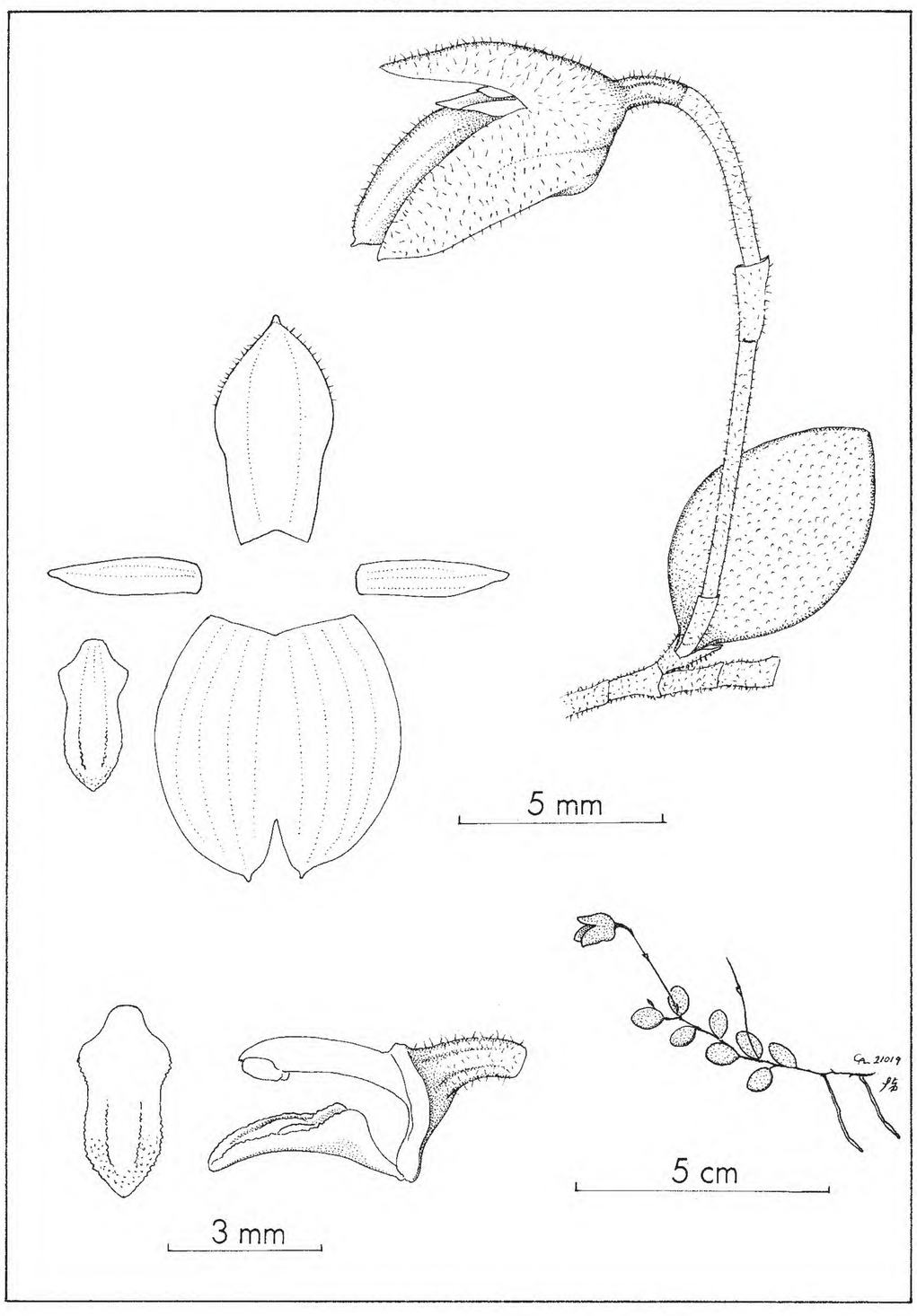


Fig. 147c. Phloeophila nummularia
Bolivia

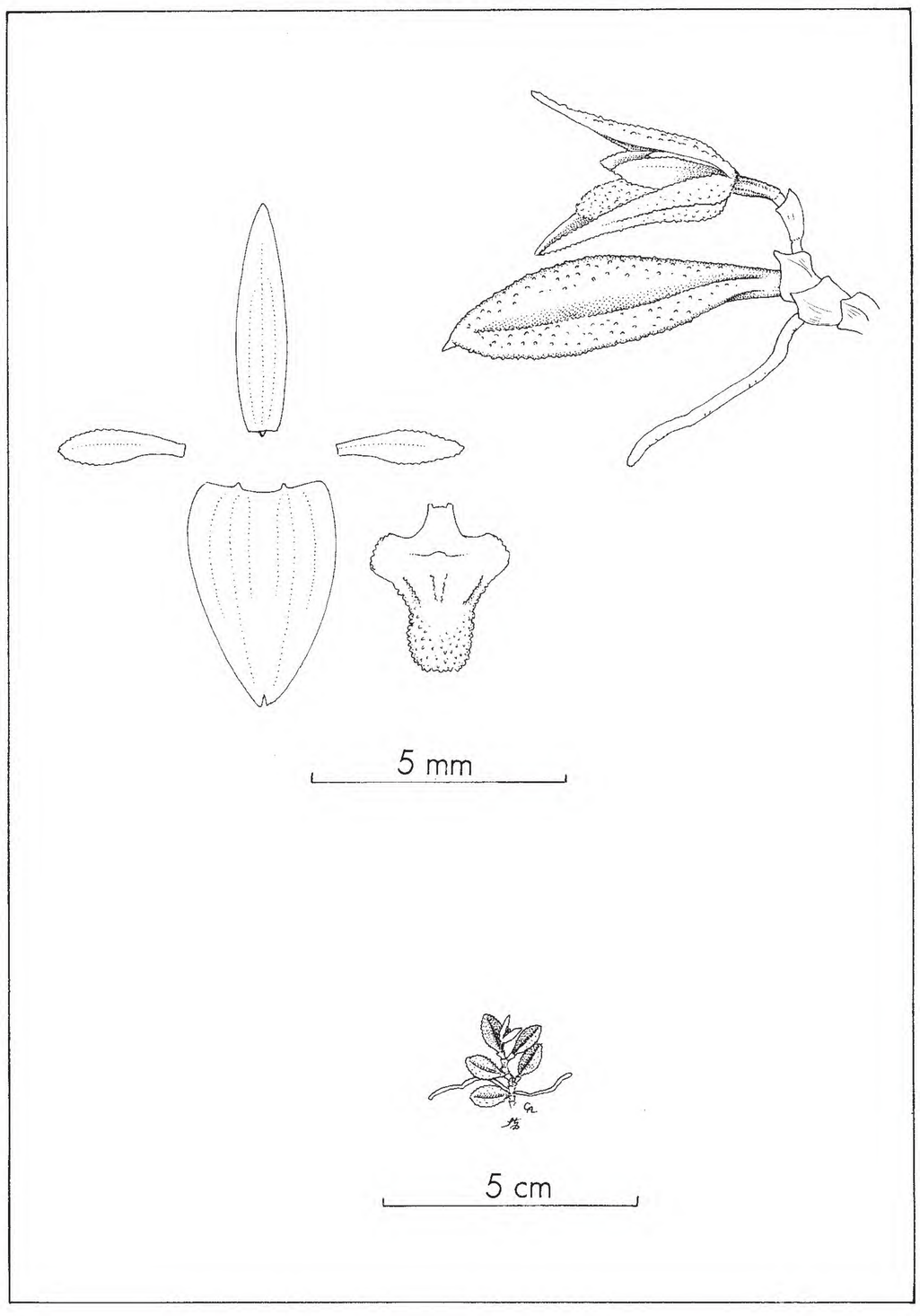


Fig. 148. Phloeophila oricola

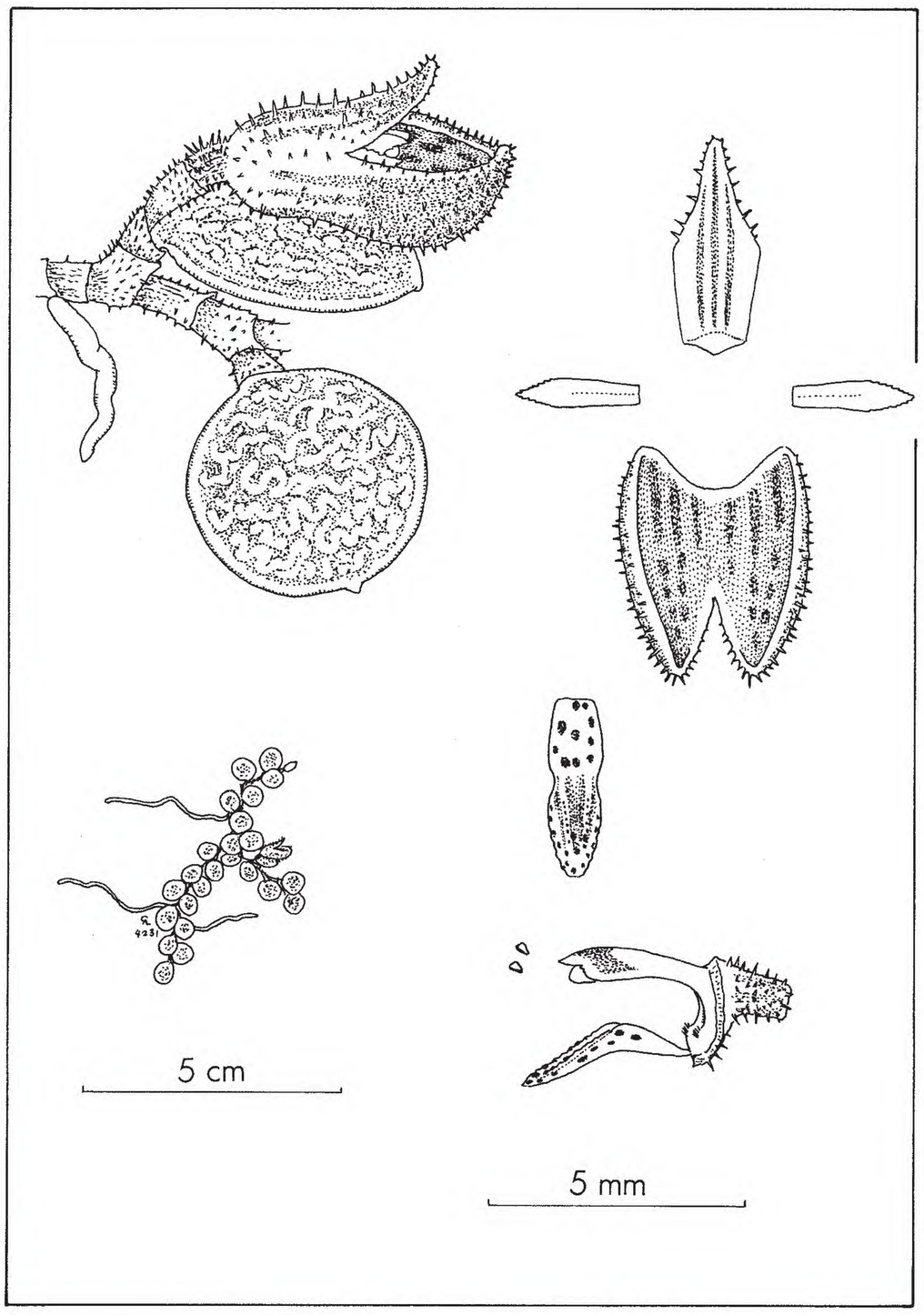


Fig. 149. Phloeophila peperomioides

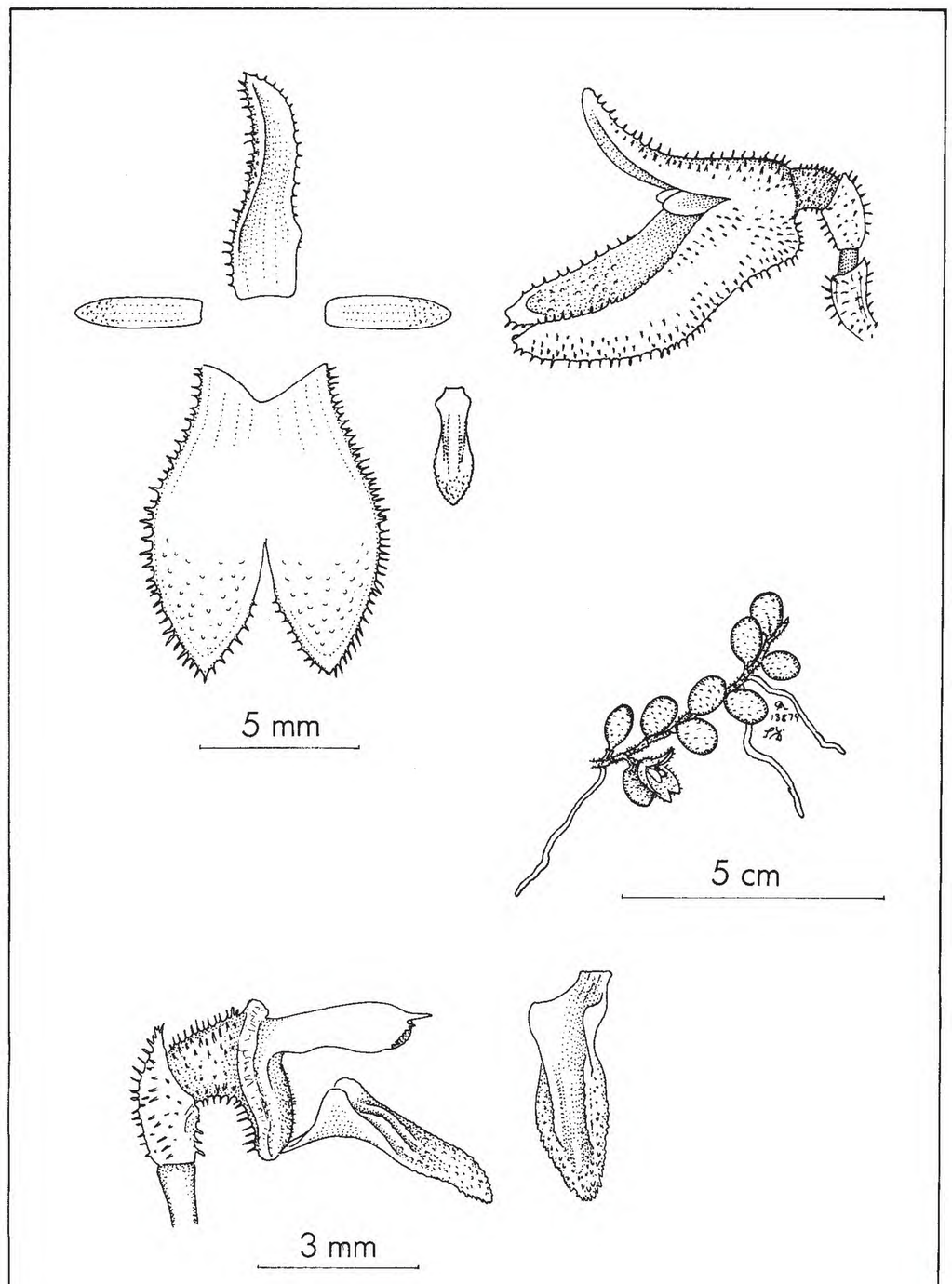


Fig. 150. Phloeophila ursula

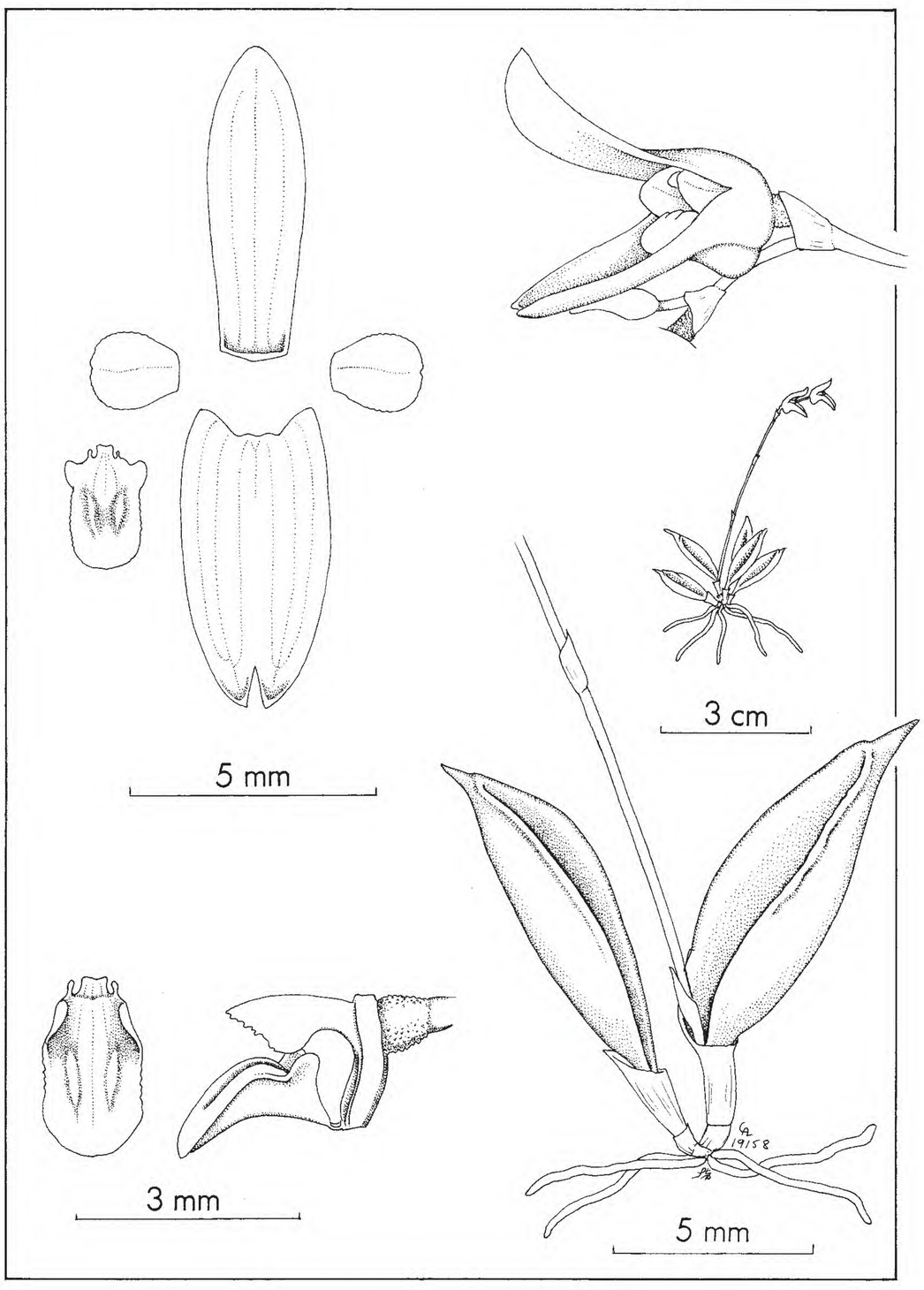


Fig. 151. Proctoria caymanensis

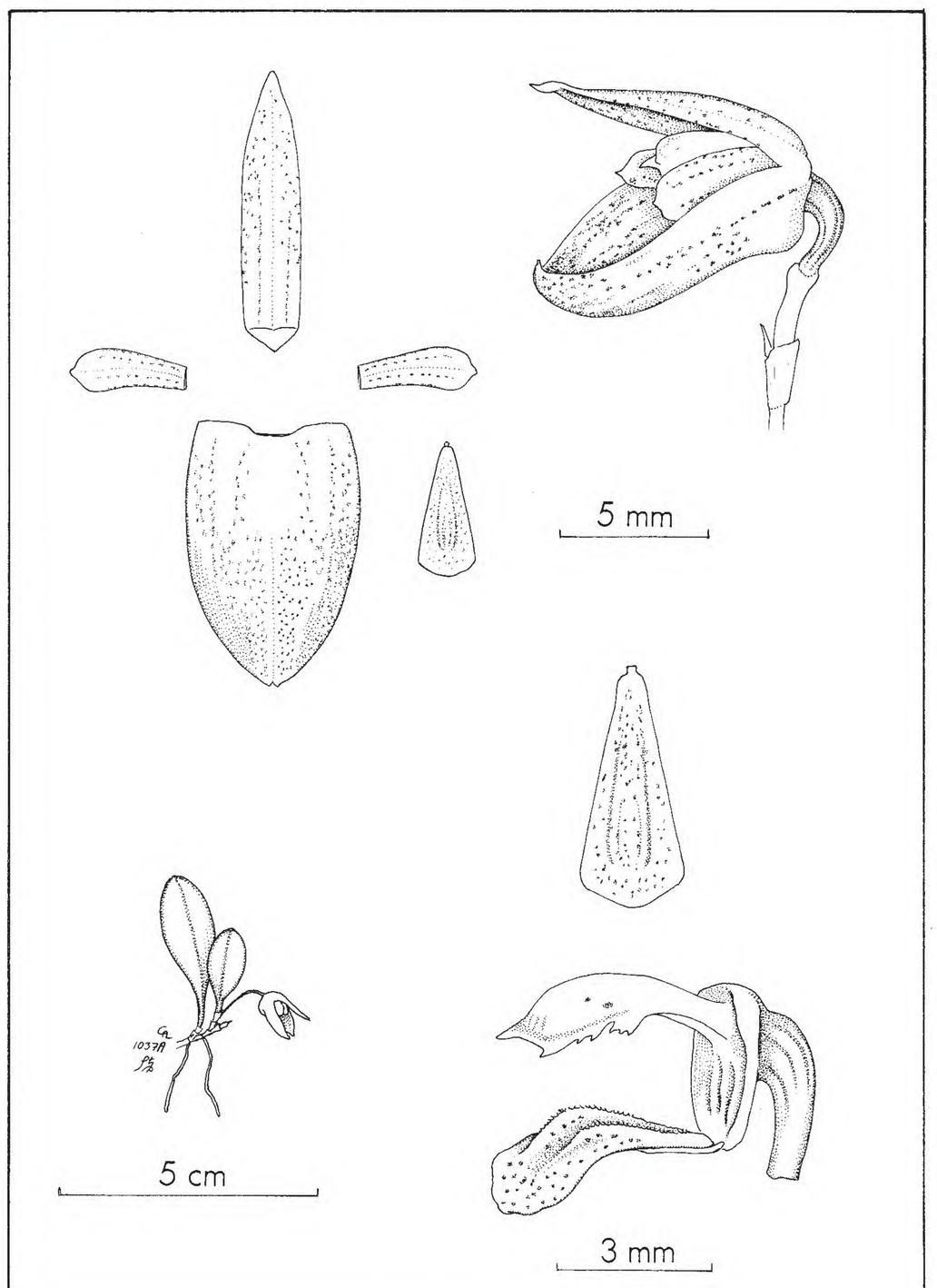


Fig. 152a. Ronaldella aryter
(Costa Rica)

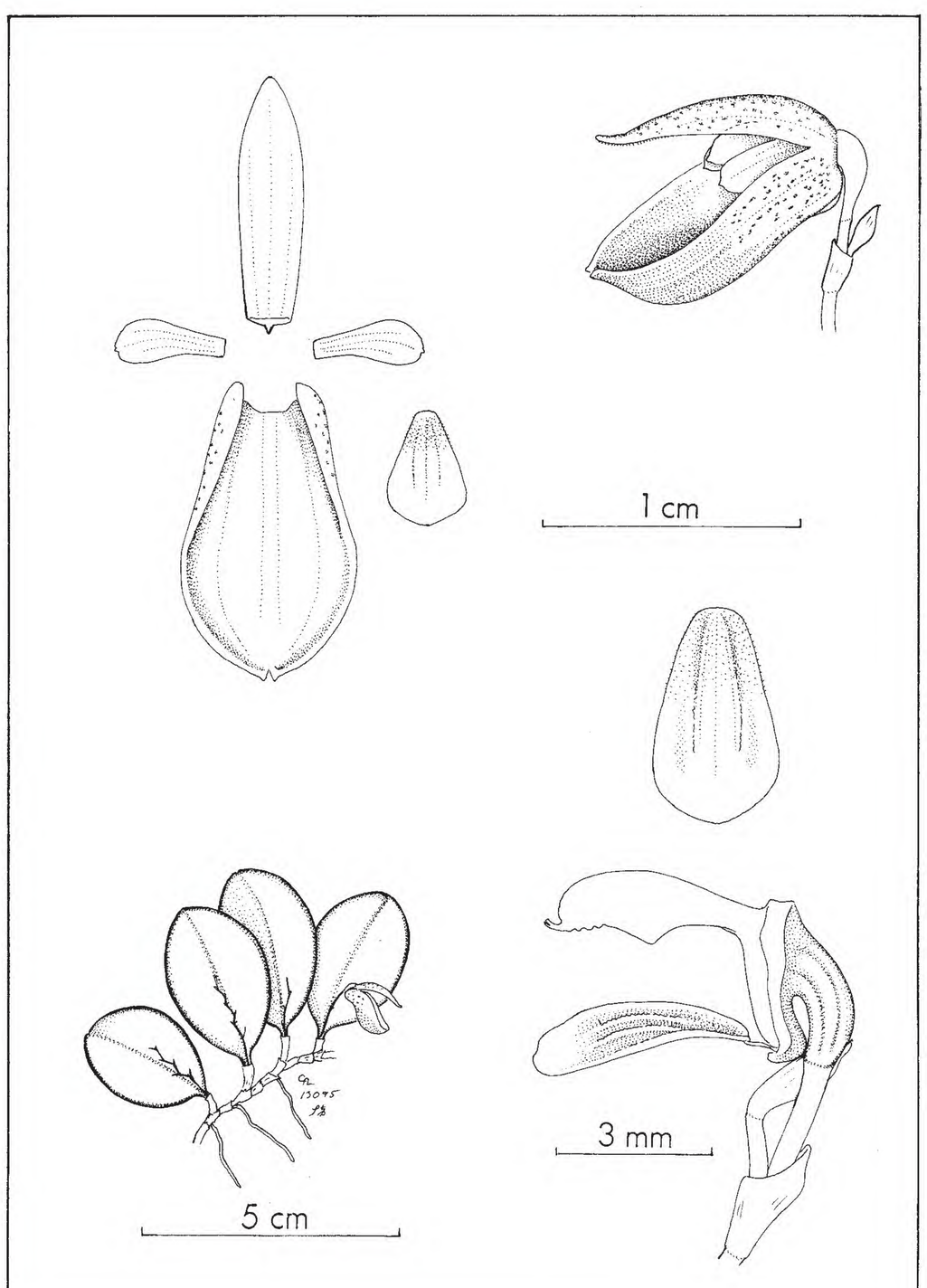


Fig. 152b. Ronaldella aryter
(Colombia)

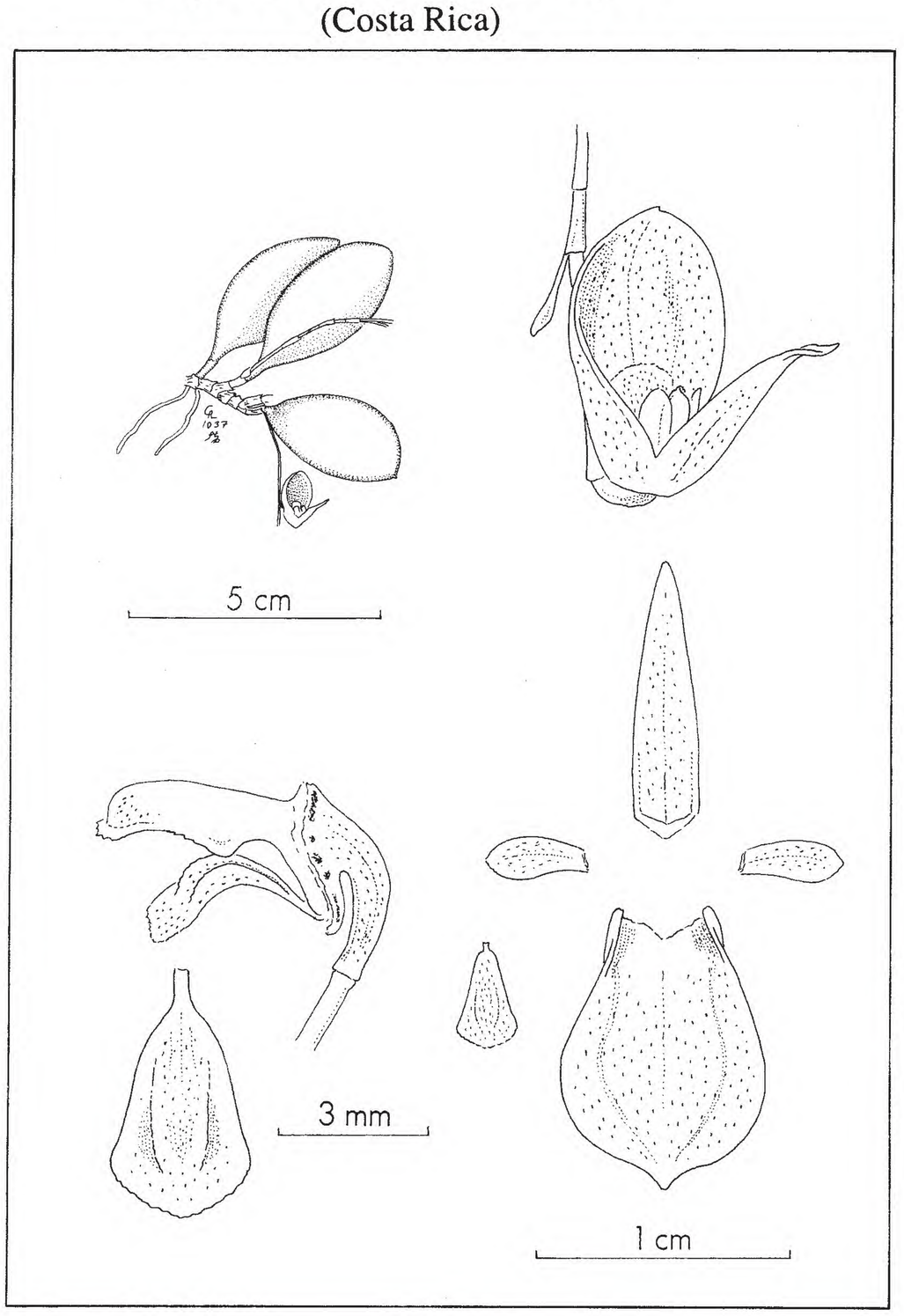


Fig. 152c. Ronaldella aryter
(Peru)

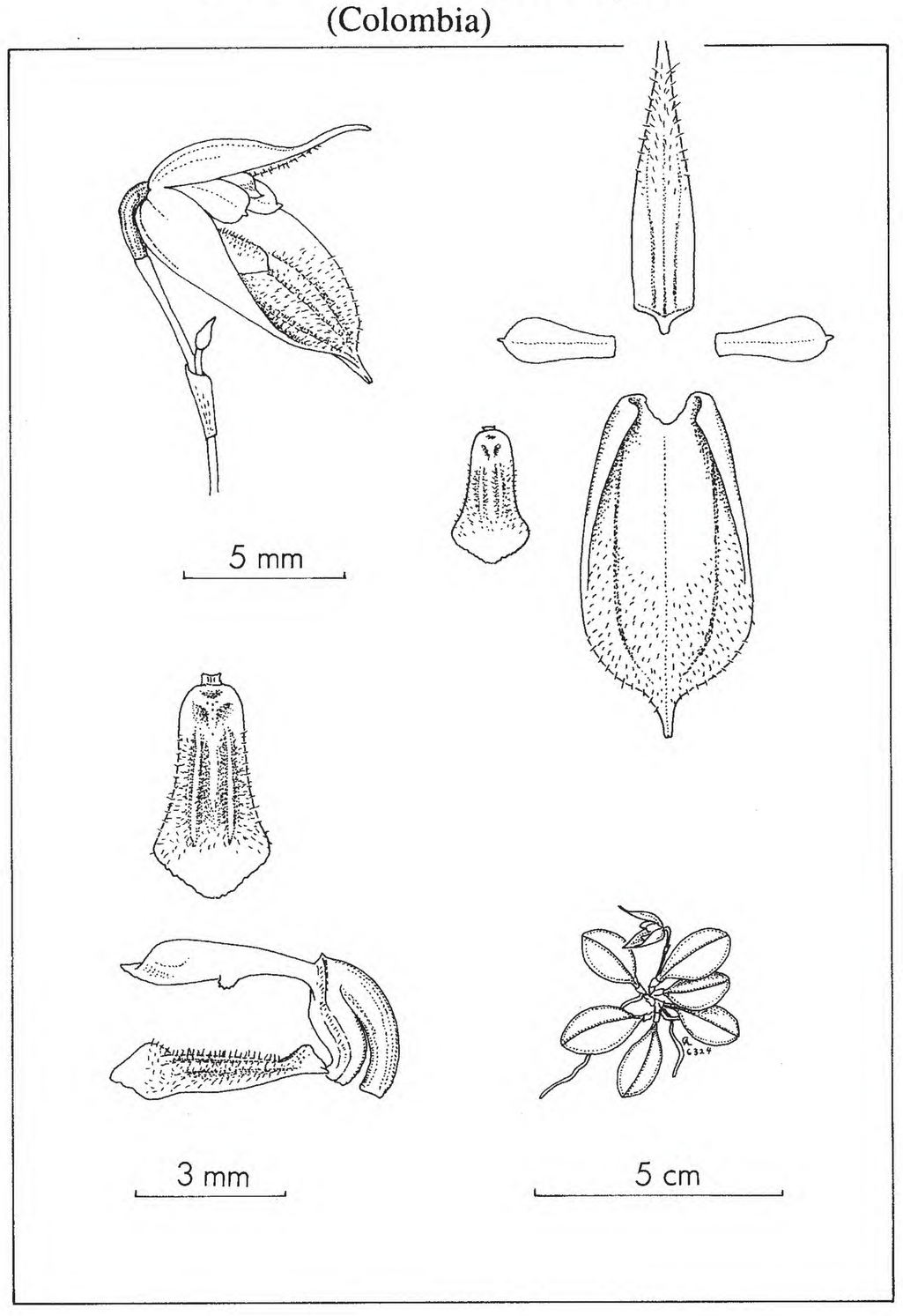


Fig. 153. Ronaldella determannii

SARCINULA

Sarcinula Luer, gen. nov.

Type: *Pleurothallis acicularis* Ames & C.Schweinf., Sched. Orch. 10: 21, 1930.

Ety.: From the Latin *sarcinula*, "a little bundle," referring to the fasciculated pedicels.

Plantae caespitosae. Pedunculus elongatus. Bracteae floralium imbricantes. Pedicili fasciculati. Petala integra margine inferiore dilatata.

Syn.: *Pleurothallis* Sect. *Apodae-Caespitosae* Lindl., Folia Orch. *Pleuroth.* 35, 1859.

Lectotype designated by Luer, 1986: 84: *Epidendrum corniculatum* Sw. [=*Sarcinula corniculata* (Sw.) Luer].

Ety.: From the Greek *apodion*, "an absent foot," and the Latin *caespitosus*, "tufted," referring to the short-stemmed, caespitose habit. The raceme of fascicled pedicels is reduced to a single flower, but often followed by a second.

Plants small to very small for the genus, epiphytic, caespitose; roots slender. Ramicauls slender, erect, much shorter than the leaf, never proliferating, with 1-3, imbricating, tubular sheaths, about the base. **Leaf** erect, coriaceous, narrowly elliptical or narrowly obovate, acute to obtuse, narrowed below to a petiolate or subsessile base. **Inflorescence** a few- to many-flowered, very congested raceme, rarely reduced to 1 flower; floral bracts imbricating; pedicels fasciculate at apex of peduncle, produced from below the apex of the ramicaul; **sepals** glabrous to pubescent or spiculate, acute to obtuse, without a tail, the dorsal sepal free to near the base, the lateral sepals variously connate; **petals** membranous, elliptical-obovate, oblique, more or less dilated on the lower margin, 2-3 veined, acute to obtuse, always entire, never ciliate, denticulate, nor fringed; **lip** with variable integument and margins, oblong to elliptical, obtuse, the disc shallowly channeled centrally between low, longitudinal calli, often obscure, the base more or less truncate, with a lobule in each corner, delicately hinged to the column-foot; **column** semi-terete, with the margins usually winged, the foot sometimes with a pair of calli, the anther ventral, deciduous, the rostellum and stigma ventral, the pollinia 2, ovoid, free.

This genus is widely distributed from Mexico through Central America and the Andes into Bolivia, but poorly represented in the Antilles or Brazil. Vegetatively, the little caespitose plants are indistinguishable from many others. An elongated peduncle bears at the tip a succession of overlapping floral bracts and a fascicle of pedicels, as in an extremely congested raceme. The sepals are tailless and variously connate. The petals are always entire, more or less dilated on the lower margin, and 2- to 3-veined. The lip is oblong, thickened, shallowly sulcate centrally, often with marginal angles and obscurely narrowed below the angles; variously verrucose or denticulate, and often with very small lobules at the corners of the base, and the column-foot is sometimes with a pair of calli as seen in *Specklinia* Lindl. Fasciculate pedicels, or a very congested raceme, is also seen in some species of *Muscarella* Luer and *Panmorphia* Luer, but the petals and lip of the latter distinguish them.

Species attributed to *Sarcinula*

Sarcinula acanthodes (Luer) Luer.....Fig. 154a, 154b.
Sarcinula acicularis (Ames & C.Schweinf.) Luer.....Fig. 155.
Sarcinula acrisepala (Ames & C.Schweinf.) Luer.....Fig. 156.
Sarcinula alexii (A.H.Heller) Luer.....Fig. 157.
Sarcinula areldii (Luer) Luer.....Fig. 158.
Sarcinula barbae (Schltr.) Luer.....Fig. 159.
Sarcinula brighamella (Luer) Luer.....Fig. 160.
Sarcinula brighamii (S.Watson) Luer.....Fig. 161.
Sarcinula calderae (Luer) Luer.....Fig. 162.
Sarcinula chontalensis (A.H.Heller & A.D.Hawkes) Luer.....Fig. 163.
Sarcinula condylata (Luer) Luer.....Fig. 164.
Sarcinula corniculata (Sw.) Luer.....Fig. 165.
Sarcinula coronula (Luer) Luer.....Fig. 166.
Sarcinula cycesis (Luer & R.Escobar) Luer.....Fig. 167.
Sarcinula displosa (Luer) Luer.....Fig. 168.

Sarcinula exilis (C.Schweinf.) Luer .....Fig. 169.
Sarcinula fulgens (Rchb.f.) Luer .....Fig. 170.
Sarcinula glandulosa (Ames) Luer .....Fig. 171.
Sarcinula guanacastensis (Ames & C.Schweinf.) Luer.....Fig. 172.
Sarcinula leptantha (Schltr.) Luer .....Fig. 173.
Sarcinula psichion (Luer) Luer .....Fig. 174.
Sarcinula purpurella (Luer) Luer .....Fig. 175.
Sarcinula scolopax (Luer & R.Escobar) Luer .....Fig. 176.
Sarcinula simmleriana (Rendle) Luer .....Fig. 177.
Sarcinula striata (H.Focke) Luer .....Fig. 178.

Sarcinula acanthodes (Luer) Luer, comb. nov.

Bas.: *Pleurothallis acanthodes* Luer, Selbyana 1: 222, 1975.

Ety.: From the Greek *acanthodes*, "prickly," referring to the exterior of the sepals.

Syn.: *Specklinia acanthodes* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, broadly elliptical, obtuse, 6-13 mm long including a petiole 2-3 mm long, 4-6 mm wide, cuneate below into the petiole. **Inflorescence** a successively several-flowered fascicle, borne by a slender peduncle 20-35 mm long; pedicels 3-4 mm long; floral bracts imbricating, ca. 2 mm long; ovary 1.5 mm long, more or less lightly echinate; **sepals** yellow-green, variously marked with purple, carinate-spiculate, glabrous within, the dorsal sepal oblong-ovate, obtuse, concave, thickened at the apex, 4 mm long, 1.75-2 mm wide, 3-veined, the lateral sepals connate to near the apex into an oblong-ovate, shallowly concave, lamina with obtuse apices, 4 mm long, 2-2.25 mm wide, 4-veined, the apices convex, obliquely thickened; **petals** pale yellow with the 2 veins purple, mottled purple between, obliquely obovate-spathulate, broadly obtuse, 1.75-2 mm long, 1 mm wide; **lip** yellow, heavily marked with purple, fleshy, oblong, subtrilobed, 2 mm long, 1 mm wide, the margins and surface cellular-glandular to minutely verrucose, with a low obtuse, marginal angles below the middle, the apex round, the disc shallowly channeled between low, longitudinal calli, the base truncate, minutely lobed at the corners, hinged beneath to the column-foot; **column** semiterete, winged above the middle, 1.25-1.6 mm long, with the apex denticulate, the foot less than 1 mm long, the anther and stigma ventral.

ECUADOR: **Napo**: dense, tall forest, 15 km west of Tena, alt. 600 m, 26 July 1975, *C. Luer, G. Luer & S. Wilhelm 475* (Holotype: SEL); Río Jatunyacu, above Shandia, alt. 650 m, 12 Mar. 1991, *A. Hirtz & S. Ortega 5362* (MO), C. Luer illlustr. 15326. **Pastaza**: near Tena, alt. ca. 1000 m, cultivated at Ecuagenera, Gualaceo, 5 Mar. 2001, *C. Luer 19704, 19706* (MO). **Morona-Santiago**: Cordillera del Cutucú, east of Sinai north of Macas, alt. 1000 m, 11 May 2000, *S. Dalström, R. Burian & L. Jost 2436* (MO).
BOLIVIA: *Cochabamba*: road to Villa Tunari, Río Evispas, alt. 500 m, 15 Jan. 1981, *C. Luer, J. Luer & R. Vásquez 5641* (SEL).

This species, widely distributed from Ecuador into Bolivia, is characterized by the small, obtuse, shortly petiolate leaves far surpassed by the peduncle that bears at the tip a fascicle of successive flowers. The sepals are carinate-spiculate externally. The lateral sepals are obliquely callous toward the apex. In the very similarly appearing *Scaphosepalum pleurothallodes* Luer & Hirtz, these calli are developed into well-defined callus-like cushions, that are typical for the genus *Scaphosepalum* Pfitzer along with minute tails. See discussion (Luer, Icones IX, pp. 126-128, 1992).

Sarcinula acicularis (Ames & C.Schweinf.) Luer, comb. nov.

Bas.: *Pleurothallis acicularis* Ames & C.Schweinf., Sched. Orch. 10: 21, 1930.

Ety.: From the Latin *acicularis*, "narrow and sharply pointed," referring to the leaves.

Syn.: *Pleurothallis dixiorum* Luer, Lindleyana 6: 97, 1991.

Ety.: Named for the doctors Margaret and Michael Dix of the Universidad del Valle, Guatemala.

Syn.: *Specklinia acicularis* (Ames & C.Schweinf.) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, narrowly linear, acute, 2-3 cm long, 1-2 mm wide, gradually narrowed below into the petiole. **Inflorescence** a congested fascicle of single, successive flowers, borne by a slender peduncle 3.5-5 cm long; pedicels 4-9 mm long; floral bracts thin, tubular, imbricating, 1.5-2 mm long; ovary 1.5 mm long; **sepals** membranous, translucent, mottled with purple, glabrous externally, densely red-spiculate within, low-carinate, the dorsal sepal oblong-ovate, acute, concave, 7-8 mm long, 2 mm wide, 3-veined, the lateral sepals connate to near the apices into an ovate, shallowly bifid lamina with acute apices, 7-7.5 mm long, 4 mm wide, 6-veined; **petals** thick, purple, obovate, oblique, 2-2.25 mm long, 1-1.4 mm wide, 2-veined, with the labellar margin dilated, the apex obtuse or subacute; **lip** yellow, suffused with purple, fleshy, cellular-glandular, spiculate, verrucose, oblong, 2.75-3 mm long, 0.6-0.8 mm wide, the apex rounded, minutely denticulate, with a small, erect, acute marginal angle between the middle and basal thirds, the disc with a pair of denticulate-spiculate calli on the middle third, the base truncate with a minute lobule at each corner, hinged to the column-foot; **column** yellow-green, suffused with purple, stout, 2 mm long, longitudinally winged with the margins minutely denticulate, dentate at the apex, the foot ca. 1 mm long, the anther and stigma ventral.

COSTA RICA: **Alajuela**: La Palma de San Ramón, alt. 1150 m, 1 Dec. 1922, *A.M. Brenes (159)490* (Holotype: AMES); Santiago de San Ramón, alt. 1000 m, 3 July 1926, *A.M. Brenes (31)1511* (AMES). GUATEMALA: **Alta Verapaz**: road to Sebol, alt. 975 m, flowered in cultivation 2 Mar. 1981, *M. Dix & M. Dix 521A* (MO, UVAL), C. Luer illustr. 14624; collected near Cobán by O. Mittlestaedt, flowered in cultivation, 13 Feb, 1990, *C. Luer 14624* (MO).

This tiny Central American species is related to the considerably larger *Sarcinula acrisepala* (Ames & C.Schweinf.) Luer. From the later, *S. acicularis* is characterized by the small caespitose habit with leaves up to three centimeters long and less than two millimeters wide, and peduncles less than five centimeters long. At the tip of a peduncle, flowers are produced successively in a fascicle of congested pedicels. The sepals are conspicuously spiculate within, and the laterals are connate to near the apex. The petals are dilated on the labellar margin, and the lip is oblong with erect, acute, marginal, lobe-like angles below the middle and a pair of denticulate-spiculate calli on the disc.

Sarcinula acrisepala (Ames & C.Schweinf.) Luer, comb. nov.

Bas.: *Pleurothallis acrisepala* Ames & C.Schweinf., Sched. Orch. 8: 22, 1925.

Ety.: From the Greek *akros*, "at the end, the tip," an unclear reference to the sepals.

Syn.: *Specklinia acrisepala* (Ames & C.Schweinf.) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-10 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, 4-8 cm long including an indistinct petiole 1-2 cm long, 0.6-1.3 cm wide, gradually narrowed below into the petiole. **Inflorescence** a congested fascicle of single, successive flowers, borne by a slender peduncle 4-10 cm long; pedicels 7-14 mm long; floral bracts thin, tubular, imbricating, 3-8 mm long; ovary 1.5-2 mm long; **sepals** membranous, translucent greenish, mottled with purple, glabrous, sharply low-carinate, the dorsal sepal oblong-ovate, acute, concave, 6.5-8 mm long, 2-2.5 mm wide, 3-veined, the lateral sepals oblong-ovate, acute, 7-7.5 mm long, 1.75-2 mm wide, 3-veined, with the sides revolute above the lower third, connate about midway to the apex; **petals** thick, purple, obovate, oblique, 2.75-3 mm long, 1.5-2 mm wide, 2-veined, with the labellar margin dilated, the apex obtuse, or slightly short-acuminate; **lip** yellow, suffused with purple, fleshy, cellular-glandular, oblong, 2.75-3.25 mm long, 1 mm wide, the apex rounded, minutely fimbriate, with a small, acute or subacute marginal angle between the middle and basal thirds, the disc with a pair of denticulate-spiculate calli on the middle third, more or less transversely cellular-rugose centrally, the base truncate with a minute lobule at each corner, hinged to the column-foot; **column** yellow-orange suffused with purple, stout, 2.5 mm long, longitudinally winged with the margins minutely denticulate, dentate at the apex, the foot ca. 1 mm long, the anther and stigma ventral.

PANAMA: **Chiriquí**: Palo Alto hill, alt. 4,000-5,000 ft., Sept. 1924, *C.W. Powell 420* (Holotype: AMES). **Colon**: summit of Cerro Santa Rita, alt. 1200-1500 m, 13 Sept. 1947, *P. Allen & D. Allen 5113* (AMES). **Panama**: between Tumba Vieja and Salamanca, alt. 60 m, 3 Dec. 1934, *J.A. Steyermark & P.H. Allen 16750* (AMES); Santa Rita Ridge, flowered in cultivation 18 June 1974, *F L Stevenson 61874-1* (SEL), C. Luer illustr. 680; Barro Colorado Island, *S. Aviles 58* (AMES).

COSTA RICA: **Cartago**: Chitaria, June 1981, cultivated 16 Oct. 1981, *L.D. Gomez 7338* (SEL), C. Luer illustr. 6529. **Puntarenas**: Rincón de Osa, alt. 20-300 m, 6 Feb. 1974, *R. Liesner 1752* (MO). **Limón**: Matina, Cordillera de Talamanca, Río Barbilla, alt. 100-200 m, 10 Oct. 1938, *G. Herrera 2251* (CR, MO, SEL); sine loc., flowered in cultivation at J & L Orchids, Easton, CT, 21 Oct. 1981, *C. Luer 6537* (SEL).
HONDURAS: **Atlántida**: Río Lancetilla near Tena, alt. 40-180 m, 7 Nov. 1988, *J.M. MacDougal et al., 3346* (MO).
COLOMBIA: **Chocó**: Bahia Solano, trail to Miniquia east of Puerto Mutis, alt. 20-120 m, 26 Jan. 1971, *D.B. Lellinger & E.R. de la Sota 17* (US).
ECUADOR: **Napo**: collected near Tena, alt. 1000 m, flowered in cultivation by Ecuagenera, Gualaceo, 11 Jan. 2004, *A. Hirtz 8664* (MO).

This species occurs frequently in Central America, but infrequently in the Andes as far as Ecuador. *Specklinia acrisepala* is characterized by the caespitose habit with leaves up to eight centimeters long and less than one and a half centimeters wide, and peduncles up to 10 centimeters long. The flowers are produced successively in a fascicle of congested pedicels at the apex of the peduncle. The lateral sepals are partially connate with the lateral margins revolute and glabrous; the petals are dilated on the labellar margin; and the lip is oblong with erect marginal angles below the middle and a pair of spiculate-denticulate calli.

Sarcinula alexii (A.H.Heller) Luer, comb. nov.

Bas.: *Pleurothallis alexii* A.H.Heller, Phytologia 14: 8, 1966.

Ety.: Named in honor of Alex Hawkes, friend and contemporary orchid enthusiast.

Syn.: *Specklinia alexii* (A.H.Heller) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant small, epiphytic, shortly repent to caespitose; roots slender. Ramicauls slender, erect, 5-8 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute, 5-8.5 cm long including an indistinct petiole 1-2 cm long, 0.6-0.8 cm wide, cuneate below into the petiole. **Inflorescence** a congested fascicle of single, successive flowers, borne by a slender, more or less horizontal peduncle 5-7 cm long; pedicels 6-8 mm long; floral bracts thin, tubular, imbricating, 4-6 mm long; ovary 2 mm long; **sepals** with all 3 apices connivent, membranous, translucent white, heavily suffused with purple above the basal third, glabrous, low-carinate, the dorsal sepal oblong-ovate, acute, concave, 11 mm long, 3.5 mm wide, 3-veined, the lateral sepals connate to above the middle into and oblong-ovate, concave synsepal, 11 mm long, 5.5 mm wide, 6-veined, with the apices acute;**petals** purple, elliptical, oblique, acute, with the labellar margin dilated, 3.5 mm long, 1.75 mm wide, 2-veined; **lip** creamy white, marked with purple on lobes and apex, fleshy, oblong-obovate, trilobed, 3.5 mm long, 1.5 mm wide, the apex rounded, microscopically cellular-denticulate, the margins with subacute angles below the middle, the disc cellular-glandular above the base, the base truncate with a minute lobule at each corner, hinged to the column-foot; **column** green, suffused with red, winged above the middle, with the margins minutely denticulate, dentate at the apex, 3 mm long, the foot ca. 1 mm long, the anther and stigma ventral.

NICARAGUA: **Matagalpa**: Cerro Matapalo, Tuma Grade, alt. ca. 3,200 ft., July 1965, *A.H. Heller 8631* (Holotype: F; Isotype: AMES); sine loc., collected by Fred Fuchs, Jr., flowered in cultivation, 24 Oct. 1980, *C. Luer 5593* (SEL).

This species is apparently rare and endemic in Nicaragua. It is characterized by the very shortly creeping rhizome and small elliptical leaves with short ramicauls. The flower is distinctive with the three acute apices of the sepals connivent, forming gaping lateral windows reminiscent of *Ophidion pleurothallopsis* (Kraenzl.) Luer. The petals are acute with the labellar margin dilated. The lip is rounded at the apex with acute, marginal angles between the middle and basal third.

Sarcinula areldii (Luer) Luer, comb. nov.

Bas.: *Pleurothallis areldii* Luer, Selbyana 2: 383, 1978.

Ety.: Named for Dr. Robert L. Dressler (an acronym of RLD), formerly of the Smithsonian Tropical Research Institute, Balboa, Canal Zone, who first collected this species.

Syn.: *Specklinia areldii* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant medium in size for the genus, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 12-15 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 8-13 cm long including an indistinct petiole 2-3 cm long, 15-20 mm wide, gradually narrowed below into

the petiole. **Inflorescence** a congested fascicle of single, successive flowers, borne by a slender, more or less horizontal peduncle 5-8.5 cm long; pedicels 10-12 mm long; floral bracts thin, tubular, imbricating, 3-5 mm long; ovary yellow, dotted with brown, 2 mm long; **sepals** membranous, dull yellow, irregularly spotted purple, carinate and glabrous externally, cellular-glandular within, the dorsal sepal ovate, acute, concave, 15 mm long, 4.5 mm wide, 3-veined, the lateral sepals connate into an ovate, acute, shortly bifid lamina, 15 mm long, 7 mm wide, 6-veined; **petals** purple, glabrous, obovate-spathulate, oblique, 5 mm long, 3 mm wide, the apex obtuse, slightly acuminate, 2-veined, with the labellar margin dilated; **lip** red-purple, fleshy, oblong, 4.5-5 mm long, 1-1.5 mm wide, the apex obtuse, minutely erose, with an obtuse marginal angle between the middle and basal thirds, the disc with a pair of minutely verrucose calli on the middle third, shallowly channeled between, the base truncate with a minute lobule at each corner, hinged to the column-foot; **column** yellow, suffused with purple, stout, 3 mm long, longitudinally winged with the margins minutely denticulate, dentate at the apex, the foot 2 mm long, the anther and stigma ventral.

PANAMA: **Chiriquí**: Fortuna dam site, alt. 750 m, Feb. 1977, collected by R.L. Dressler s.n., flowered in cultivation, 9 Aug. 1977, *C. Luer 1653* (Holotype: SEL).
COLOMBIA: *Valle de Cauca*: cultivated by Orquídeas del Valle, collected nearby, 15 Mar. 1997, *C. Luer 18443* (MO).

This species is most closely related to *Sarcinula brighamii* (S.Watson) Luer, among those species characterized by a fascicle of successive flowers borne by a slender peduncle. It differs from them by the larger vegetative and floral parts; a more or less horizontal peduncle; acute, purple-spotted sepals; oblique, sub-spathulate petals; and an oblong lip with obtuse marginal angles below the middle.

Sarcinula barbae (Schltr.) Luer, comb. nov.

Bas: *Pleurothallis barbae* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 104, 1923.
Ety.: Named for Volcán Barba where this species was collected.

Syn.: *Specklinia barbae* (Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-18 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** thinly coriaceous, erect, narrowly elliptical, acute, 3-6 cm long including an indistinct petiole 1-2.5 cm long, 0.6-1.2 cm wide, gradually cuneate below into the petiole. **Inflorescence** a congested, fascicle of single, successive flowers, 2 flowers often open simultaneously; borne by a slender peduncle 4-5 cm long; pedicels 4-6 mm; floral bracts thin, tubular, imbricating, 3-4 mm long; ovary 1 mm long; **sepals** membranous, glabrous except for cellular margins, sharply low-carinate, yellow-orange, the dorsal sepal ovate, acute, concave, 8 mm long, 3.5 mm wide, 3-veined, the lateral sepals connate to near the apex into an oblong-ovate, shallowly bifid lamina with subacute apices, 8.5 mm long, 5 mm wide above the base, 6-veined, with the sides revolute above the lower third; **petals** translucent light orange with orange veins, obovate, oblique, 3 mm long, 1.5 mm wide, 2-veined, the margins dilated, the labellar margin greater, the apex obtuse, shortly acuminate; **lip** bright orange, thickly fleshy, oblong, 2.75 mm long, 1.5 mm wide, rounded at the apex, with a pair of low calli above the middle on the convex disc, the disc with a rounded, shallow, sticky cavity above a broad, concave claw, hinged to the column-foot; **column** bright orange, stout, 2 mm long, longitudinally winged with the margins minutely denticulate, dentate at the apex, the foot ca. 1 mm long, with a converging pair of marginal calli near the middle, the anther and stigma ventral.

COSTA RICA: **Heredia**: Vulcán Barba, alt. ca. 2000 m, 21 Jan. 1909, *A. & C. Brade 1127* (Holotype of *P. barbae* destroyed at B, Lectotype here designated: AMES; Isolectotype: HB); Yerba Buena, northeast of San Isidro, alt. 2000 m, 22, 28 Feb. 1926, *P.C. Standley & J. Valerio 49056, 49088, 49828, 49846, 49888, 49909, 49916, 49958, 49963, 49993, 50032, 50103, 50121* (AMES); Cerro de la Caricias, north of San Isidro, alt. 2000-2400 m, 11 Mar. 1926, *P.C. Standley & J. Valerio 52092, 52153, 52308, 52336, 52471, 52476, 52488* (AMES); Cerro da las Lajas, alt. 2000-2400 m, 7 Mar. 1926, *P.C. Standley & J. Valerio 51469, 51560, 51617* (AMES); Cerro de Zurquí, alt. 2000-2400 m, 3 Mar. 1926, *P.C. Standley & J. Valerio 50369, 50539* (AMES); Cerro Gallito, alt. 2000 m, 20 Dec. 1927, *J. Valerio 66* (AMES); Arriba de Gallito, collected by R. Escobar, flowered in cultivation at Colomborquídeas, 10 Apr. 1988, *C. Luer 13119* (MO); Zurquí, alt. 2000 m, 16 Nov. 1979, *K.S. Walter 79-384* (SEL), C. Luer illustr. 4833; Arriba de Gallito, collected by R. Escobar, 1986, flowered in cultivation at Colomborquídeas, 10 Apr. 1988, *C. Luer 13119* (MO).
PANAMA: *Chiriquí*: Cerro Punta, alt. 2000 m, collected by E. Olmos, cultivated by Finca Dracula, 14 Nov. 1998, *C. Luer 18780* (MO).

This species was described by Schlechter from a Costarica collection by the Brade brothers on Volcán Barba. It is a florally distinctive species characterized by the small, caespitose habit with short ramicauls, and a fascicle of pedicels borne near the tips of the leaves by slender peduncles. The flowers are medium in size for the genus, and orange in color. The synsepal is broad with the sides revolute above the basal third. The apex of the oblique petals is obtuse and shortly acute. The lip is thick with a pair of low calli on the convex surface. A rounded, gland-like structure is present above the broad, decurved, claw-like base.

Sarcinula brighamella (Luer) Luer, comb. nov.

Bas.: *Pleurothallis brighamella* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 171, 1999.

Ety.: Named for the resemblance to a small *Sarcinula brighamii* (S.Watson) Luer.

Syn.: *Specklinia brighamella* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, obtuse, 14-18 mm long including a petiole 1-2 mm long, 4-4.5 mm wide, cuneate below into the petiole. **Inflorescence** a congested fascicle of single, successive flowers, borne by a slender, erect peduncle 20-25 mm long; pedicels 3-4 mm long; floral bracts thin, tubular, imbricating, acuminate, 2.5-3 mm long; ovary 1-1.5 mm long; **sepals** membranous, light tan, flecked with red along the veins, subcarinate, glabrous, the dorsal sepal oblong, acute, 5 mm long, 2 mm wide, 3-veined, the lateral sepals connate above the middle into an ovate, bifid lamina, 5 mm long, 3.25 mm wide, 6-veined, the apices acute; **petals** translucent, mottled and edged in purple, obovate-spathulate, oblique, 2.5 mm long, 1 mm wide, the apex subacute, 2-veined, with the labellar margin dilated; **lip** orange-brown, fleshy, oblong, 2.5 mm long, 1.3 mm wide, the apex rounded, microscopically erose, with an obtuse marginal angle between the middle and basal thirds, the disc with a pair of minutely verrucose calli above the middle, shallowly channeled between, the base truncate with a minute lobule at each corner, hinged to the column-foot; **column** yellow, suffused with purple, stout, 2.3 mm long, longitudinally winged, bidentate at the apex, the foot 1 mm long without calli, the anther and stigma ventral.

PANAMA: **Chiriquí**: near Finca Dracula, cultivated by Maduro's Tropical Flowers at Cerro Punta, 18 Nov. 1998, *C. Luer 19005* (Holotype: MO).

This very small species with leaf with ramicaul usually less than 20 centimeters tall is closely related to the relatively frequent and widely distributed *Sarcinula brighamii* (S.Watson) Luer. It is distinguished from the latter by the minute habit; much smaller, red-flecked, tan sepals; and a column-foot devoid of calli.

Sarcinula brighamii (S.Watson) Luer, comb. nov.

Bas.: *Pleurothallis brighamii* S.Watson, Proc. Amer. Acad. 23: 285, 1888.

Ety.: Named for Brigham, an acquaintance of Watson from Guatemala.

Syn.: *Specklinia brighamii* (S.Watson) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant small to medium in size for the subgenus, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-10 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute, 3-8 cm long including an indistinct petiole 1-3 cm long, 6-10 mm wide, gradually narrowed below into the petiole. **Inflorescence** a congested fascicle of single, successive flowers, borne by a slender, suberect peduncle 4-5 cm long; pedicels 3-9 mm long; floral bracts thin, tubular, imbricating, 3-4 mm long; ovary 1-1.5 mm long; **sepals** membranous, dull yellow, suffused longitudinally along the veins with purple-brown, solidly suffused toward the base, subcarinate and glabrous externally, cellular-glandular within, the dorsal sepal oblong, acute, 5.5-8 mm long, 2.5-3 mm wide, 3-veined, the lateral sepals connate above the middle into an obovate, bifid lamina, 6-8 mm long, 5-5.5 mm wide, 6-veined, the apices acute; **petals** yellow, veined in purple or brown, glabrous, obovate-spathulate, oblique, 2-2.5 mm long, 1-2 mm wide, the apex obtuse, 2-veined, with the labellar margin dilated; **lip** deep purple, fleshy, oblong, 2.5-3.5 mm long, 1 mm wide, the apex rounded, minutely erose, with an obtuse marginal angle between the middle and basal thirds, the disc with a pair of minutely verrucose calli on the middle third, shallowly channeled between, the base truncate with a minute lobule at each corner, hinged to the column-foot; **column** yellow, suffused with purple, stout, 2-3 mm long, longitudinally winged with the margins sometimes minutely denticulate, dentate at the apex, the foot 1 mm long with a pair of thick, obtuse calli, the anther and stigma ventral.

GUATEMALA: **Alta Verapaz**: forests of Chocón, collected 1885?, flowered in cultivation at Cambridge, Aug. 1887, *S. Watson s.n.* (Holotype: AMES); Río Chacón, alt. 100 ft., 11 Feb. 1921, *H. Johnson 1180* (AMES); Jocoló, Río Jocoló, alt. 100 ft., Mar. 1921, *S. Watson 1281* (AMES). **Peten**: Santa Teresa, Subin River, 12 Apr. 1933, *C.L. Lundell 2668* (AMES); San Clemente to Dos Arroyos, 1 May 1931, *H.H. Bartlett 12816* (AMES); south of Tikal National Park, 19 June 1973, *T.B. Croat 24755* (MO). **Izabal**: along Río Frio, alt. 75 m, 17 Dec. 1941, *J.A. Steyermark 39914* (AMES).
MEXICO: **Chiapas**: Agua Azul, alt. 500 m, *Lamas et al. s.n.* (K, illustr.); Union Juárez, Volcán Tacana, alt. 1600-2400 m, 19 June 1985, *E. Martínez S. 13347* (MEXU, MO); Ocosingo, road to Boca Lacantum, alt. 200 m, 18 Aug. 1984, *E. Martínez S. 7455* (MEXU, MO).
Yucatan: Campeche, ruins south of Villahermosa, 7 Jan. 1932, *C.L. Lundell 1158* (AMES).
BELIZE: El Cayo district, June-July 1936, *C.L. Lundell 6342* (AMES); Toledo, Southern Maya Mountains, Bladen Nature Reserve, alt. 250 m, 14 May 1997, *G. Davidse 36416* (MO).
EL SALVADOR:
HONDURAS: **Atlantida**: Mt. Cangrejal, Danto River, alt. 1,100 ft., 30 July 1938, *T.G. Yuncker et al. 8713* (AMES, K); northwest of Cabeza del Negro, alt. 200-500 m, 26 Apr. 1994, *D.L. Hazlett & A.E. Brant 8103* (MO). **Cortes**, Santa Cruz de Yojoa, *J.B. Edwards 514* (AMES). **Yoro**: vicinity of Progresso, Río Palo, 8 Mar. 1923, *O. Ames II 121* (AMES); Río Texiquat, alt. 300 m, 11 Apr. 1995, *T. Hawkins & M. Merello 750* (MO).
COSTA RICA: sine loc., ca. 1867, *A. Endres 24* (Illustr. at W). **Puntarenas**: Peninsula de Osa, alt. 100 m, collected by J. Combronero, flowered in cultivation by J. García in San José, 16 Mar. 1995, *C. Luer 17402* (MO). **San José**: vicinity of El General, alt. 915 m, Dec. 1935, *A.F. Skutch 2322* (AMES). **Limón**: east of El Carmen, alt 10 m, 29 Mar. 1972, *R.W. Lent 2423* (MO).
PANAMA: **Bocas del Toro**: Isla Colon, 20 Aug. 1940, *H. Wedel 486* (AMES). **Chiriquí**: flowered in cultivation by P. Jesup in Bristol, CT, 10 Dec. 1988, *C. Luer 13789* (MO). **Panama**: foothills east of Panama City, sea level, Feb. 1924, *C.W. Powell 274* (AMES); along Río Tecumen, north of Chepo road, alt. 30 m, 27 Jan. 1935, *A.A. Hunter & P.H. Allen 225* (AMES); vicinity of Salamanca Hydrographic Station, Río Pequení, alt. 80 m, 28 July 1938, *R.E. Woodson, P.H. Allen & R.J. Seibert 1585* (AMES); Río Maestra, alt. 25 m, 4 Dec. 1936, *P.H. Allen 54* (AMES); Barro Colorado Island, 10 Jan. 1940, *F.W. Hunnewell 16435* (AMES); Peninsula de Osa, alt. 100 m, collected by J. Combronero, flowered in cultivation by J. García, 16 Mar. 1995, *C. Luer 17402* (MO); San José Island, Perlas Archipelago, Gulf of Panama, Río Mareno north of Red Hill, 12 Oct. 1944, *I.M. Johnston 135* (AMES); same island, mouth of Matta Puerco, 13 Nov. 1944, *I.M. Johnston 487* (AMES).
HAITI: Rio Glace, *D. Dod 1026* (MO), C. Luer illustr. 16540.
CUBA: **Guantanamo**: Imías. Monte Oscuro (esquistos), 2 May 1998, *J. Guttiérrez, J. Hernández & R. Villaverde 76425* (HAJB).
JAMAICA: Cockpit country, collected by the Jesups and the Luers, Nov. 1985, flowered in cultivation in Bristol, CT, 10 Dec. 1988, by P. Jesup, *C. Luer 13790* (MO),
ECUADOR: **Esmeraldas**: west of Lita, toward San Lorenzo, alt. 60 m, 25 Jan. 1996, *A. Hirtz 6267* (MO); C. Luer illustr. 17843.

This species is relatively common and widely distributed from southernmost Mexico through Panama, and rarely as far as the lowlands of northwestern Ecuador. It is characterized by the tuft of small, narrowly obovate leaves and a fascicle of pedicels held about as high as the leaves by a slender peduncle. The yellow or light brown synsepal is suffused with brown below the middle, and expanded toward the bifid apex. The petals are oblique and obovate-spathulate with a dilated lower margin; and the dark purple lip is oblong with obtuse marginal angles below the middle. A pair of thick, obtuse calli are present on the column-foot.

Sarcinula calderae (Luer), Luer, comb. nov.

Bas.: *Pleurothallis calderae* Luer, Orquideología, 22: 53, 2001.

Ety.: Named for the Río Caldera in northern Colombia where the species was collected.

Syn.: *Specklinia calderae* (Luer), Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-4 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, narrowly elliptical-obovate, acute to subacute, 3-4 cm long including an indistinct petiole ca. 5 mm long, 6-7 mm wide, gradually narrowed below into the subpetiolate base. **Inflorescence** a single flower produced successively in a congested fascicle, borne by a slender peduncle 3.5-4.5 cm long; pedicels 6-8 mm long; floral bracts thin, imbricating, 3-4 mm long; ovary 2 mm long; **sepals** membranous, glabrous, low-carinate, tan with brown stripes, the dorsal sepal oblong with revolute margins above the middle, obtuse, 11 mm long, 2.5 mm wide, 3-veined, the lateral sepals oblong, oblique, acute, convex above the middle, 10.5 mm long, 2 mm wide, 3-veined, connate below the middle; **petals** translucent tan, obovate, oblique, acute, 2.5 mm long, 1.2 mm wide, 2-veined, the

labellar margin slightly dilated; **lip** brown, oblong, 2.5 mm long, 0.8 mm wide, with low, obtuse, marginal angles between the mid and basal thirds, the apex rounded, cellular-glandular, the disc shallowly sulcate between a pair of low, parallel calli along the middle two-thirds, glandular-cellular, the base truncate, obscurely bilobulate, hinged to the column-foot; **column** green, suffused with purple, stout, 2 mm long, longitudinally winged, dentate at the apex, the foot ca. 1 mm long, the anther and stigma ventral.

COLOMBIA: **Antioquia**: Río Caldera, alt. 800 m, cultivated by M. & O. Robledo at La Ceja, 19 Mar. 1989, *C. Luer 14273* (Holotype: MO).

Among the species with fasciculate pedicels, this species from lowland Colombia is most similar to Central American *Sarcinula simmleriana* (Rendle) Luer. It is distinguished from the latter by the proportionately small petals and lip compared to the longer sepals; and a non-denticulate, rounded apex of the lip.

Sarcinula chontalensis (A.H.Heller & A.D.Hawkes), Luer, comb. nov.

Bas.: *Pleurothallis chontalensis* A.H.Heller & A.D.Hawkes, Phytologia 14: 10, 1966.

Ety.: Named for the department of Chontales, Nicaragua, where the species was discovered.

Syn.: *Specklinia chontalensis* (A.H.Heller & A.D.Hawkes), Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls short, erect, 4-5 mm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, elliptical-obovate, subpetiolate, with the apex obtuse to rounded, 18-30 mm long including the petiole 3-4 mm long, 6-9 mm wide, cuneate below into the petiolate. **Inflorescence** a very congested, successive, 2- to 3-flowered raceme, more or less fasciculate, ca. 1 mm long, borne by a slender, glandular peduncle 20-22 mm long, from the ramicaul; floral bracts imbricating, 2 mm long; pedicels 4 mm long; ovary trialate, 3 mm long; flowers stated to be yellow-orange; **sepals** tall-carinate, microscopically pubescent within, the dorsal sepal narrowly obovate, acute, 10.5 mm long, 3 mm wide, 3-veined, the lateral sepals narrowly ovate-triangular, oblique, acute, connate 5 mm to the middle, 10 mm long, 4 mm wide together, 6-veined; **petals** membranous, obovate, oblique, acute, 2.5 mm long, 1 mm wide, with the labellar margin dilated; **lip** fleshy, oblong, 3 mm long, 1 mm wide, slightly dilated above the middle, with the apical half verrucose, denticulate, rounded at the apex, the disc with a low, parallel pair of irregular calli near the middle, the margins in the lower third with a very small, erect, acute lobe, the base subunguiculate, hinged beneath to the column-foot; **column** semiterete, long-denticulate at the apex, 2.5 mm long, the foot 1 mm long, the anther and stigma hooded and ventral.

NICARAGUA: **Chontales**: Río Mico, epiphytic, alt. 1,900 ft., Aug. 1960, *A.H. Heller 3735* (Holotype: AMES); same locality, alt. 1,400 ft., *A.H. Heller 7827* (AMES); Cerro El Chamarro, La Libertad district, alt. 2,175 ft., *A.H. Heller 1036* (AMES).
COSTA RICA: **Alajuela**: Santa Maria National Park, primary forest, Caribbean slope, alt. 600 m, 8 Feb. 1978,*R. Liesner 5187* (MO), C. Luer illustr. 16519.

This Costa Rican species is distinguished by obovate leaves borne by abbreviated ramicauls. The inflorescence is a congested, successively few-flowered raceme borne by a minutely glandular peduncle about as long as the leaves. The sepals are minutely ciliate, acute, the laterals semiconnate; the petals are ventricose; the lip is oblong with tiny lateral lobes on the lower third, and with the apical half verrucose and denticulate.

Sarcinula condylata (Luer) Luer, comb. nov.

Bas.: *Pleurothallis condylata* Luer, Selbyana 3: 80, 1976.

Ety.: From the Latin *condylatus*, "with knuckles," in allusion to the apex of the lip.

Syn.: *Specklinia condylata* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant medium in size for the subgenus, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 6-10 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute, 3-6.5 cm long including an indistinct petiole ca. 1 cm long, 0.7-1.2 cm wide, gradually narrowed below into the petiole. **Inflorescence** a congested fascicle of single, successive flowers, borne by a slender, suberect peduncle 3-6 cm long; pedicels 4-8 mm long; floral bracts thin, tubular, imbricating, 3-5 mm long; ovary green, spotted with brown, 2 mm long; **sepals** membranous, yellow, flecked with red-brown, carinate and glabrous externally, cellular-glandular within, the dorsal sepal ovate, acute, concave, 10-13 mm long, 5-6 mm wide, 3-veined, the lateral sepals connate to about the middle into an obovate, bifid lamina with acute apices, 13-15 mm long, 7-8.5 mm wide together, 6-veined; **petals** yellow, spotted with brown, glabrous, obovate, oblique, obtuse, 4.5-5.5 mm long, 2-2.75

mm wide, 2-veined, with the labellar margin slightly dilated; **lip** red-purple, cuneate-oblong, 6-8 mm long, 3-4 mm wide, the apex obtuse to subtruncate, recurved, with a low, obtuse marginal angle between the middle and basal thirds, the disc shallowly concave between a pair of longitudinal calli, the base truncate, hinged to the column-foot; **column** green, spotted with purple, semiterete, 5 mm long, longitudinally winged above the middle, the foot about equally long, the anther and stigma ventral.

PANAMA: **Chiriquí**: Fortuna dam site, alt. 750 m, Feb. 1977, collected by R.L. Dressler s.n., flowered in cultivation, 9 Aug. 1977, *C. Luer 1653* (Holotype: SEL).
COSTA RICA: **Cartago**: above San Cristóbal, alt. 1800 m, collected by L. Acosta, flowered in cultivation by J. García in San José, 16 Mar. 1995, *C. Luer 17401* (MO). **Puntarenas**: Rincon de Osa, alt. 20-300 m, 6 Feb. 1974, *R. Liesner 1750* (MO); Osa, El Campo, between Aguabuena and Baneguitas, alt. 350 m, 13 Jan. 1991, *G. Herrera 4818* (CR, MO); Osa de Sierpe, Río San Juan, alt. 600 m, 25 Jan. 1991, *G. Herrera 4871* (CR, MO); above San Vito, alt. 1500 m, collected by L. Acosta, flowered in cultivation by J. García in San José, 16 Mar. 1995, *C. Luer 17400, 17401* (MO).

This species, perhaps most similar to *Sarcinula areldii* (Luer) Luer, is distinguished by the small clump of narrowly elliptical-obovate leaves, and peduncles nearly as long that bear a fasciculate raceme of successive, comparatively large, yellow flowers flecked with brown. The petals are dilated along the lower margin. The dark red-purple lip is proportionately large and cuneate with the truncate apex more or less lobulate and decurved.

Sarcinula corniculata (Sw.) Luer, comb. nov.

Bas.: *Epidendrum corniculatum* Sw., Prodr. 123, 1788.
Ety.: From the Latin *corniculatus*, "little-horned," referring to the flower.

Syn.: *Dendrobium corniculatum* (Sw.) Sw., Nov. Act. Upsal. 6: 83, 1799.
Syn.: *Cymbidium corniculatum* (Sw.) Spreng., Syst. Veg. 3: 722, 1826.

Syn.: *Specklinia emarginata* Lindl., Gen. Spec. Orch. Pl. 8, 1830.
Ety.: From the Latin *emarginatus*, "emarginate," referring to the leaf.

Syn.: *Specklinia corniculata* (Sw.) Steud., Nom. Bot., ed. 2, 2: 431, 1841, nom. illeg.
Syn.: *Pleurothallis corniculata* (Sw.) Lindl. Bot. Reg., Misc. 83, 1942.
Syn.: *Pleurothallis vilipensa* Rchb.f., Hamburger Blumen-Gartenzeitung 13: 3, 1857.
Ety.: From the Latin *vilipensus*, "vilified, worthless," Reichenbach's opinion of the species.

Syn.: *Pleurothallis nubigena* Lindl., Ann. Mag. Nat. Hist. ser. 3, 1: 326, 1858, as *rubigena*.
Ety.: From the Latin *nubigena*, "begotten of a cloud," referring to the habitat.

Syn.: *Pleurothallis pyrsodes* Rchb.f., Gard. Chron. 2: 386, 1870.
Ety.: From the Greek *pyrsodes*, "firelike, hence orange or red," referring to the color of the flower.

Syn.: *Humboldtia corniculata* (Sw.) Kuntze, Gen. Sp. Pl. 2: 667, 1891.
Syn.: *Humboldtia pyrsodes* (Rchb.f.) Kuntze, Gen. Sp. Pl. 2: 668, 1891.
Syn.: *Humboldtia vilipensa* (Rchb.f.) Kuntze, Gen. Sp. Pl. 2: 668, 1891.

Syn.: *Pleurothallis barboselloides* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 17: 18, 1922.
Ety.: Named for the superficial similarity of the species to a *Barbosella*.

Syn.: *Pleurothallis jocolensis* Ames, Sched. Orch. 2: 19, 1923.
Ety.: Named for Jocoló, a locality in Guatemala where the species was collected.

Syn.: *Specklinia barboselloides* (Schltr.) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.
Syn.: *Specklinia pyrsodes* (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-12 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, elliptical, subacute to obtuse, 2-5 cm long including a petiole 0.3-1 cm long, 0.5-1.5 cm wide, cuneate below into the petiolate base. **Inflorescence** a solitary, long-pedicellate flower, often followed by a second, borne by a capillary peduncle, 2.5-4.5 cm long, from the ramicaul; floral bract thin, tubular, 2-3 mm long; pedicel 10-15 mm long; ovary 2-2.5 mm long; **sepals** membranous, glabrous, low-carinate, yellow to orange, sometimes with darker veins, more or less thickened toward the apex, the dorsal sepal elliptical, subacute to narrowly obtuse, concave, 6-10 mm long, 2.5-3 mm wide, 3-veined, the lateral sepals connate into an ovate, shortly bifid synsepal with subacute apices, 6-8 mm long, 3-4 mm wide, 6-veined; **petals** translucent light yellow, elliptical-obovate, acute to narrowly obtuse, oblique, dilated on the labellar margin, 2-3 mm long, 1-1.5 mm wide, 2- to 3-veined; **lip** yellow or orange, fleshy, oblong, subtrilobed, 2.5-2.75 mm long, 0.75-1 mm wide, with obtuse, marginal angles between the middle and basal thirds, the apex rounded with the margins microscopically denticulate-erose, the disc shallowly sulcate between a pair of low, parallel calli above the middle, the base truncate without lobules, hinged to the column-foot; **column** semiterete, 1.75-2 mm long, longitudinally winged, dentate at the apex, the foot ca. 1 mm long, the anther and stigma ventral.

JAMAICA: sine loc., *O. Swartz s.n.* (Holotype of *Epidendrum corniculatum*: BM); sine loc., "lowlands," Nov. 1885, *J.P. Syme & D. Morris 2403* (K, NY); near Rodney Hall, *Purdie s.n.* (K); sine loc., 2 Oct. 1855, *D. Morris s.n.* (W); Hopeton, Westmoreland, alt. 1,400 ft., 19 Sept. 1907, *W. Harris 9781* (BM, NY). **Portland**: Windsor Forest to Lawrence Bottom, alt. 500 ft., 20 Sept. 1960, *C.D. Adams 8085* (MO). **St. Thomas**: Mansfield, 15-19 Sept. 1908, *N.L. Britton 3565* (AMES, NY). **St. Elizabeth**: Gorge of Jones River, north of Ginger Hill, alt. 900-1000 ft., 25 Apr. 1961, *G.R. Proctor 22232* (AMES). **Trelawny**: northwest of Troy, alt. 2250 m, 24 May 1953, *G.R. Proctor 8009* (AMES). **Cornwall**: northwest of Troy, along Crown Lands Road, alt. 640 m, 10 Nov. 1985, *C. Luer, J. Luer, A. & P. Jesup 11474* (MO).
CUBA: Oriente: 1856-57, *C. Wright 657* (holotype of *P. nubigena*: K; isotypes: AMES, BR); near Monte Verde, Jan.-July 1859 (1860-1864), *C. Wright 1501* (AMES, BM, BR, HAC, K, LE, MO, NY, W); Sierra Nipe, alt. 450-550 m, 5 Dec. 1909, *J.A. Schafer 3037* (AMES, NY); Vicinity of Piedra Gorda, 26 Jan. 1910, *J.A. Schafer 3707* (AMES, NY); Loma del Gato, vicinity of Cobre Range of Sierra Maestra, Alt. 1000-1200 m, 11 July 1921, *Fre. Leon, Fre. Clement & Fre. M. Roca 10238* (AMES, NY); Loma del Gato, July 1944, *Bro. Alain 369* (AMES, HAC). Santa Clara, Trinidad Mts., Arroyo de Manaca, alt. 320 m, 4 Mar, 1910, *N.L. Britton & E.G. Britton 5016* (AMES, NY). **Las Villas**: south of Manicaragua, 1 July 1953, *R.L. Dressler 1293* (MO); south of Cumanayagua, 5 July 1953, *R.L. Dressler 1313* (MO); Sancti Spíritus, Alturas de Sancti Spíritus, alt. 500 m, 16 Nov. 1975, *A. Alvarez, J. Bisse, H. Dietrich et al. 28853* (JE). **Santa Clara**: Pitajones to Ciegos de Ponciano, 29 Feb. 1912, *J.A. Schafer 12258* (NY); Sancti-Spiritus Mountains, Sierra del Caballete, 1-11 Aug. 1916, *Bros. Leon & Clement 6580* (NY).
HAITI: Riviere Glace, alt. 2200 ft., 5 May 1944, *J. T. Curtis 36* (AMES); Riviere Glace: alt. 750 m, 6 Aug. 1945, *I.R. Holdridge 2196* (AMES).
GUATEMALA: **Isabal**: Jocoló, Río Perdonalis, *H. Johnson 1048* (holotype of *P. jocolensis*: AMES).
BELIZE: Toledo District: Blue Creek above Blue Creek Village, alt. 40 m, 15 Feb. 1979, *I. McLeish & B.R. Adams B-11* (K).
HONDURAS: **Atlántica**: near Tela Guaymas, 9 Mar. 1923, *O. Ames II 143a* (AMES). **Colon**: Claura, Apr. 1923, *H.J. Spinden s.n.* (AMES).
NICARAGUA: **Chontales**: sine loc., *A.H. Heller 9724* (SEL).
COSTA RICA: **Cartago**: south of Cartago, 1869, *A. Endres 58* (W); Río Payres, camino real, ca. 1867, *A. Endres 85, sketch 219* (illustr. at W). **Guanacaste**: Los Ayotes, near Tilaran, alt. 600-700 m, 21 Jan. 1926, *P.C. Standley & J. Valerio 45446, 45472, 45503* (AMES); La Tejona, north of Tilaran, alt. 600-700 m, 25 Jan. 1926, *P.C. Standley & J. Valerio 45958, 46034, 46040* (AMES).
PANAMA: **Chiriquí**: Mata Frances between David and Boquete, alt. 500 m, 11 Sept. 1976, *C. Luer & H. Butcher 1244* (SEL). **Coclé**: El Valle, alt. 1000 m, Nov. 1976, *G. Kennedy s.n.* (SEL). **Panama**: foothills near city, near sea level, Apr.-May 1919, *C.W. Powell 92* (holotype of *P. barbosel-loides* destroyed at B; lectotype designated here: MO; isolectotype: AMES); near Tapia River, Juan Díaz region, 1-3 June 1923, *W.R. Maxon & A.D. Harvey 6699* (AMES, US); road to Cerro Jefe, northeast of Lago Cerro Azul, alt. 600-800 m, 11 May 1974, *M. Nee 11543* (MO). **Darien**: vicinity of Canglon, west of bridge in Canglon, alt. 50 ft., 14 May 1980, *T. Antonio 4601* (MO). **Colón**: between Colón and Porto Belo, 18 June 1977, *J.P. Folsom 3764* (MO).
CENTRAL AMERICA: sine loc., obtained by Reichenbach from *Mr. William Saunders s.n.* (holotype of *P. pyrsodes*: W), C. Luer illustr. 18561.
COLOMBIA: **Antioquia**: Villa Arteaga, alt. 100 m, 19 Apr. 1948, *F.S. Soto & F.A. Barkley 18C615* (US); Villa Artega, alt. 150 m, 6 Dec. 1958, *F. Lopez & M.J. Sanchez 29, 30* (US). **Chocó**: Río Atrato, Samurindó, alt. ca. 80 m, 1 Apr. 1958, *J. Cuatrecasas & M. Llano 24112* (US); Bahia Solano, alt. 150 m, collected by G. Gerlach, cultivated at Colomborquídeas, 20 Apr. 1997, *R. Escobar 8326* (MO). **Valle del Cauca**: epiphytic in moist forest around Coteje on Río Timbiqui, alt. 0-300 m, Nov. 1898, *F.C. Lehmann B.T. 332* (K); Bajo Calima, between Concessión Pulpapel and Buenaventura, alt. 100 m, 13 Mar. 1986, *Miryam Monsalve B. 1003* (CUVC). Sine loc., cultivated at the Botanischer Garten Hamburg, obtained from *Warscewicz s.n.* (holotype of *P. vilipensa*: W).
VENEZUELA: Barinas: Río Parángula near Barinitas, Apr. 1973, alt. 500 m, *G.C.K. Dunsterville 1270.*
GUYANA: 1898, *E.F. im Thurn 34* (K); Arawak Matope Falls, Oct. 1904, *A.W. Bartlett 8399* (K); Essequibo River, Moraballi Creek near Bartica, alt. near sea level, 15 Oct. 1929, *N.Y. Sandwith 461* (K); between Mazaruni Station and Labbakabra Creek, 27 Aug. 1937, *N. Y. Sandwith 1224* (K).
FRENCH GUIANA: Route regina to St. Georges, Savane roche du 14 Juillet, 16 Apr. 1991, *G. Cremers 12177* (CAY, MO).

This species was first collected in Jamaica, and described by Swartz in 1788 as *Epidendrum corniculatum* [=*Sarcinula corniculata* (Sw.) Luer]. In 1830, Lindley listed *E. corniculatum* in the synonymy of his description of *Specklinia emarginata* [=*Sarcinula corniculata*]. In 1859, Lindley erred when he listed *Epidendrum*

monophyllum Hook. (Exot. Fl. t.109, 1825) [=*Antilla alpestris* (Sw.) Luer] and his *Specklinia emarginata* as synonyms of the Peruvian *Pleurothallis emarginata* [=*Physosiphon emarginatus* (Lindl.) Lindl.] with a mixed description of both taxa. Beginning with Lindley, *Sarcinula corniculata* has also been misidentified as *Pleurothallis hymenantha* Lindl., a species he described from Brazil.

Sarcinula corniculata is frequent and widely distributed through Central America, the Greater Antilles and northernmost South America. It is characterized by elliptical leaves surpassed by a slender, elongate peduncle that bears a single, yellow to orange flower on a long, slender pedicel. Only occasionally does a second pedicel bear another flower. The sepals are membranous and subacute, sometimes with darker stripes along the veins; the petals are dilated on the labellar margin; and the lip is oblong with marginal angles on the lower half and shallowly sulcate medially between a pair of low calli.

Sarcinula corniculata (Sw.) Luer is commonly confused with *S. striata* (H.Focke) Luer, which is distinguished by a several-flowered, congested, short-pediceled fascicle borne by a slender peduncle, while *S. corniculata* bears on long pedicels one, or a second flower.

Sarcinula coronula (Luer) Luer, comb. nov.

Bas.: *Pleurothallis coronula* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 171, 1999.

Ety.: From the Latin *coronula*, "a little crown," referring to the fringed cavity at the base of the lip.

Syn.: *Specklinia coronula* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 259, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-9 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, narrowly elliptical, acute, 15-20 mm long including the petiole 5-8 mm long, 3-4.5 mm wide, gradually narrowed below into the petiolate base. **Inflorescence** a congested, successively flowered fascicle; peduncle 2.5-5 cm long, borne laterally from the ramicaul; floral bracts thin, tubular, imbricating, 2.5-3 mm long; pedicels 5 mm long; ovary lightly papillose, 1.25 mm long; **sepals** translucent light green, suffused with rose centrally, membranous, minutely denticulate with denticulate carinate, the dorsal sepal oblong, subacute, concave, shortly acuminate, 7 mm long, 4 mm wide, 3-veined, the lateral sepals connate to above the middle into an ovate, bifid lamina with acute, acuminate apices, 7 mm long, 5 mm wide, 4-veined; **petals** translucent rose, obliquely oblong, shortly unguiculate, obliquely obtuse at the apex, 3 mm long, 1.75 mm wide, 1-veined, with the margins minutely erose; **lip** rosy brown, elliptical-oblong, 3.75 mm long, 1.5 mm wide, with the margins thin and serrate, rounded at the apex, the disc with a longitudinal pair of subparallel calli nearly the length of the lip, at the base the calli join to form a fringed cup-like cavity, the apex with a central, serrated callus, the base hinged to the column-foot; **column** 2 mm long, with broad, round wings, the foot 2 mm long, with a prominent pair of pedunculated calli near the middle, the anther subapical and stigma ventral.

COLOMBIA: **Nariño**: sine loc., collected by José Luis Aguirre, cultivated by J & L Orchids at Easton, CT, 19 June 1998, *C. Luer 18824* (Holotype: MO).
ECUADOR: sine loc., collected and cultivated in Quito, 2001, *A. Hirtz 7876* (MO), C. Luer illustr. 20230.

This little species has been found on rare occasions in southern Colombia, and somewhere in Ecuador. The flower is borne successively in a fascicle by a slender peduncle twice or more longer than the leaves. The shortly acuminate sepals are minutely carinate-denticulate. The petals are obliquely obtuse with minutely erose margins. The lip is elliptical with thin, serrate margins. A longitudinal pair of carinae join above the base to form a fringed crown-like cavity. A large, pedunculated callus is present on either side of the column-foot.

Sarcinula cycesis (Luer & R.Escobar) Luer, comb. nov.

Bas.: *Pleurothallis cycesis* Luer & R.Escobar, Orquideología 20: 49, 1996.

Ety.: From the Greek *kykesis*, "a mixture," in allusion to the unusual combination of morphological characters.

Syn.: *Specklinia cycesis* (Luer & R.Escobar) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-5 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, narrowly obovate, subacute, 10-13 mm long, 2.5-3 mm wide, the base gradually narrowed to the subpetiolate base. **Inflorescence** a fascicle of solitary, successive flowers, large for the plant, borne by capillary peduncle, more or less lightly tuberculate, 22-25 mm long, laterally from the ramicaul; floral bracts imbricating, 2 mm long; pedicels 3-4 mm long; ovary 1 mm long; **sepals** membranous, glabrous, low-carinate, rosy cream, light purple toward the base, the dorsal sepal ovate, acute, concave below the middle, 9 mm long, 4 mm wide, 3-veined, the lateral sepals connate into an ovate, acute, minutely bifid synsepal, 8.5 mm long, 4 mm wide, 4-veined; **petals** translucent light yellow, obovate, oblique, obtuse, 4 mm long, 1.4 mm wide, the margins minutely irregular-erose; **lip** purple, elliptical, arcuate, 2.75 mm long, 1.75 mm wide, the apex rounded, the margins minutely denticulate-erose, the disc with a parallel pair of minutely irregular carinae, the base truncate, obscurely biauriculate, hinged to the column-foot; **column** slender, 2 mm long, with a pair of oblong, descending wings above the middle, the foot equally long with a pair of auricles above the base, the anther exposed but ventral as are the rostellum and stigma.

COLOMBIA: **Antioquia**: Munic. of Turbo, collected by H. Angarita, July 1987, flowered in cultivation by M. & O. Robledo at La Ceja, 19 Mar. 1989, *C. Luer 14290* (Holotype: MO).

This tiny species, apparently endemic in the Central Cordillera of Colombia, is distinguished by the fascicle of successive, comparatively large flowers borne by a hairlike peduncle about twice as long as the leaves. Most unusual is the elliptical, minutely fimbriate, bicarinate lip, and the column with a pair of conspicuous, descending, oblong wings. On the lower portion of the foot are a pair of auricles as seen in the loosely racemose-flowered *Specklinia grobyi-picta* complex.

Sarcinula displosa (Luer) Luer, comb. nov.

Bas.: *Pleurothallis displosa* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 172, 1999.

Ety.: From the Greek *displosus*, "spread out," referring to the elongate raceme.

Syn. *Specklinia displosa* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 4-6 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, narrowly elliptical, acute, 4-6 cm long including an indistinct petiole 1-1.5 cm long, 0.8-1.2 cm wide, gradually narrowed below into the subpetiolate base. **Inflorescence** a subcongested to lax, disheveled, progressively flowered raceme up to 12 cm long including the capillary peduncle 4-6 cm long, borne laterally from the ramicaul; floral bracts thin, tubular, 2-3 mm long, fugacious below; pedicels 4-5 mm long; ovary 2 mm long; **sepals** membranous, glabrous, low-carinate, yellow with orange veins, the dorsal sepal obovate, subacute, concave, 6 mm long, 2 mm wide, 3-veined, the lateral sepals connate to above the middle into an oblong-ovate, bifid lamina with acute apices, 6 mm long, 2.75 mm wide, 6-veined; **petals** translucent light yellow with orange veins, obovate, oblique, acute, dilated on the labellar margin, 2.75 mm long, 1 mm wide, 2-veined; **lip** bright orange, fleshy, oblong, 2.75 mm long, 0.66 mm wide, with low, broadly obtuse, marginal angles between the mid and basal thirds, the apex rounded with the margins cellular, the disc shallowly sulcate between a pair of low, parallel calli nearly the length of the lip, glandular-cellular, the base truncate, hinged to the column-foot; **column** yellow, 2 mm long, longitudinally winged, dentate at the apex, the foot ca. 1 mm long, the anther and stigma ventral.

PANAMA: **Coclé**: El Valle del Antón, alt. ca. 1000 m, collected by George Kennedy, flowered in cultivation, 20 Oct. 1981, *C. Luer 6533* (SEL).

This species, known only from a Panamanian collection by Dr. George Kennedy, is closely related to the widely distributed *Sarcinula corniculata* (Sw.) Luer. The habit of *S. dispolsa* is considerably larger with leaves about twice as broad. The inflorescence reaches 12 centimeters or more in length, about half the length consisting of an elongating, disheveled, successively many-flowered raceme. The orange flowers are similar to those of *S. corniculata*, but the raceme of *S. corniculata* is single-flowered, only occasionally followed by a second.

Sarcinula exilis (C.Schweinf.) Luer, comb. nov.

Bas.: *Pleurothallis exilis* C.Schweinf., Fieldiana Bot. 28: 183, 1951.
Ety.: From the Latin *exilis*, "small, meager," referring to the habit.

Syn.: *Specklinia exilis* (C.Schweinf.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 260, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-10 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 15-22 mm long including a petiole 3-5 mm long, 4-7 mm wide, the base cuneate into the petiole. **Inflorescence** an erect, congested, successively few-flowered raceme, up to 1 cm long including the peduncle, borne laterally from the ramicaul; floral bract 3-4 mm long; pedicel 3-4 mm long; mature capsule 6 mm long, 2.5 mm wide; **sepals** (color unknown), subcarinate, the dorsal sepal ovate, acute, 4 mm long, 1.75 mm wide, 3-veined, the lateral sepals connate into an ovate, entire lamina, 4 mm long, 3 mm wide, 2-veined, free; **petals** translucent, broadly elliptical-obovate, obtuse, slightly acuminate, 2 mm long, 1.25 mm wide; **lip** oblong, obtuse, 2.5 mm long, 1 mm wide, the disc shallowly concave longitudinally between what might have been intramural calli, the base hinged to the column-foot; **column** thick, semiterete, 1 mm long, the anther and the stigma distorted, but probably ventral.

VENEZUELA: **Monagas**: Cerro de la Cueva de Doña Anita, alt. 1100-1200 m, 7 Apr. 1945, *J.A. Steyermark 61902* (Holotype: F; Isotype: AMES), C. Luer illustr. 18949.

This little species is poorly known, having been described from a fruiting collection. Apparently it is known from only a single valley in northeastern Venezuela west of the Orinoco delta where it was noted to be abundant by Steyermark, but, as far as I know, has not been seen again or elsewhere. All specimens collected are in a very advanced stage of fructification with dehiscing capsules and distorted, shriveled flowers at the summit, not at all candidates for description.

The ramicauls are less than half as long as the elliptical leaves. The flowers are produced successively in two- to four-flowered racemes from the ramicaul by short peduncles. All ovaries are mature, dehiscing capsules. The flowers are wrinkled and distorted, but after hydration in concentrated ammonia, a reasonable illustration can be made with artistic license. The dorsal sepal and synsepal are acute, the petals are broad and obtuse, and the lip is entire and oblong. There appear to have been marginal thickening as if there had been intramural calli on the middle third.

Sarcinula fulgens (Rchb.f.) Luer, comb. nov.

Bas.: *Pleurothallis fulgens* Rchb.f., Gard. Chron. 4: 516, 1875.
Ety.: From the Latin *fulgens*, "shiny," referring to the smooth, orange, shining sepals.

Syn.: *Pleurothallis brenesii* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 182, 1923.
Ety.: Named for Alberto M. Brenes of San Ramón, Costa Rica, who collected this species.

Syn.: *Specklinia fulgens* (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant large for the genus, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 2-5 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, petiolate, 5-11 cm long including the petiole 1.5-3 cm long, the blade elliptical, acute to subacute, 1.5-3 cm wide, cuneate below into the petiole. **Inflorescence** a fascicled, successively several-flowered raceme, borne by a slender peduncle 4-5.5 cm long, from low on the ramicaul; floral bracts imbricating, 6-7 mm long; pedicels 10-14 mm long; ovary crested, 2.5 mm long; **sepals** red-orange to yellow-orange, fleshy, glabrous, carinate, thickened toward the apex, the dorsal sepal ovate, acute, concave, 10-12 mm long, 4.5-5 mm wide, 3-veined, the lateral sepals connate about midway into an elliptical-ovate, bifid synsepal with acute tips, 12-15 mm long, 9-10 mm wide, forming a shallow mentum with the column-foot, 6-veined; **petals** orange, elliptical, oblique, acute, 4-5 mm long, 1.5 mm wide, 2-veined, dilated on the middle third of the lower margin; **lip** orange, oblong-trilobed, 4.5-5 mm long, 1-1.5 mm wide, with short, acute, antrorse marginal lobes below the middle, minutely verrucose above the middle with the apex rounded, microscopically denticulate-erose, with an apiculum beneath, the disc shallowly channeled between verrucose, longitudinal calli, the base truncate, hinged beneath to the column-foot; **column** semiterete, 4-4.5 mm long, the anther, rostellum and stigma ventral, the foot 2 mm long.

COSTA RICA: sine loc., ca. 1867, *A. Endres 2512* (Holotype: W). **Alajuela**: San Ramón and Boca del Dota towards Cerro Pito, ca, 1867, as "cinnabarina," *A. Endres 35, 51, 52* and illustrations at W; San Pedro de San Ramón, alt. 700 m, June 1921, *A.M. Brenes 30* (holotype of *P. brenesii* destroyed at B, lectotype: CR; isolectotypes: AMES, NY); La Palma de San Ramón, alt. 1100 m, 25 Oct. 1927, *A.M. Brenes 12* (AMES); La Palma, 1100 m, 25 Oct. 1922, *A.M. Brenes 342* (AMES); sine loc., collected by

Leon Glicenstein, flowered in cultivation by P. Jesup in Bristol, CT, 13 Mar. 1994, *C. Luer 17142* (MO).
PANAMA: **Panama**: Canal Zone, Cerro Horquito, alt. 4,000-5,000 ft., *C.W. Powell 335* (MO).

This species occurs locally in Costa Rica and Panama, having been first collected by Endres. Although uncommon today, Endres commented that it was common around San Ramón. It is large for the genus with ramicauls up to seven centimeters long, and a large, petiolate leaf. Large, shiny, orange flowers are produced successively in a fascicle at the tip of a peduncle about half as tall as the leaf. The petals are oblique and acute; and the lip is three-lobed below the middle.

Sarcinula glandulosa (Ames) Luer, comb. nov.

Bas.: *Pleurothallis glandulosa* Ames, Sched. Orch. 6: 60, 1923.
Ety.: From the Latin *glandulosus*, "glandular," referring to the peduncle, pedicel and ovary.

Syn.: *Pleurothallis vittariifolia* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 19: 26, 1923.
Ety.: Referring to the similarity of the leaves to those of *Vittaria*, a genus of ferns.

Syn.: *Pleurothallis pertenuis* C.Schweinf., Bot. Mus. Leafl. 3: 83, 1935.
Ety.: From the Latin *pertenuis*, "very thin," referring to the "herb," and scape.

Syn.: *Specklinia vittariifolia* (Ames) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.
Syn.: *Specklinia glandulosa* (Ames) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-6 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, narrowly linear-obovate, acute, 20-30 mm long, 1.5-3 mm wide, gradually narrowed below into the base. **Inflorescence** a single, orange flower, usually followed by a second; peduncle slender, pubescent to minutely tuberculate, 25-40 mm long, produced laterally from the ramicaul; floral bract shortly pubescent, 1.5-2 mm long; pedicels minutely pubescent or scabrous, 5-8 mm long; ovary pubescent to minutely verrucose, 1 mm long; **sepals** minutely ciliate along veins externally, glabrous within, subcarinate, the dorsal sepal ovate, acute, concave, 5.5-7.5 mm long, 2-2.25 mm wide, 3-veined, the lateral sepals oblong, acute, 5.5-7.5 mm long, 1.5 mm wide, 3-veined, connate to about the middle, forming a mentum with the column-foot; **petals** translucent, obovate, oblique, acute, 2.75-3 mm long, 1-1.6 mm wide, the lower margin dilated; **lip** oblong, arcuate, cellular-glandular, 3 mm long, 1 mm wide, with small, erect, acute or obtuse marginal angles below the middle, the apex rounded, minutely denticulate, the disc shallowly sulcate between a parallel pair of microscopically verrucose calli along the middle third, the base subtruncate, hinged to the column-foot; **column** semiterete, 2-2.5 mm long, with a pair of apical teeth, the foot 2 mm long, the anther hooded, the stigma ventral.

PANAMA: **Panama**: San Juán Grande range, sea level, Sept. 1923, *C.W. Powell 306* (Holotype: AMES; Isotype: MO); near Vigía and San Juan on Río Pequení, alt. 66 m, 27 Nov. 1934, *C.W. Dodge, J.A. Steyermark & P.H. Allen 16578* (BM); Cerro Azul, near Goofy Lake, 24 Aug. 1960, *J.E. Ebinger 984* (MO). **Bocas del Toro**: between Gutierrez and Pinola, flowered in cultivation 4 Jan. 1979, *R.L. Dressler s.n.* (SEL). **Veraguas**: west of Las Minas, Cerro Alto Higo, 2,400-3,000 ft., 6 Aug. 1978, *B. Hammel 4289* (MO). **Los Santos**: Loma Prieta, Cerro Grande, alt. 2,400-2,800 ft., *W.H. Lewis et al. 2214* (MO).
BELIZE: Cayo District: below summit of Buddy Beacon, Mountain Pine Ridge, alt. 1000 m, 14 Oct. 1979, *B.R. Adams 210* (K).
HONDURAS: **La Mosquita**: Gracias a Dios, near Wampusirpi, alt. below 175 m, sine d., *A.F. Clewell 4524* (MO).
COSTA RICA: **Alajuela**: San Jeronimo, alt. 1350 m, June 1921, *C. Wercklé 117* (holotype of *P. vittarifolia* destroyed at B; Lectotype here designated: AMES 28807, top of sheet); San Pedro de San Ramón **Alajuela**: Potrerillos, east of Piedades south of San Ramón, alt. 1235 m, 22 June 1969, *R. Lent 1762* (CR). **Limón**; Guápiles, Río Corinto, alt. 500 m, 7 Sept. 1990, *C. Chávez 52* (INBio, MO). **San José**: Estación Carrillo, fila de Cañon del Río Sucio, alt. 400-750 m, 12 Nov. 1983, *I. Chacón & G. Herrera 1641* (CR); Santa Rosa de Puriscal, Río Negro, alt, 400 m, 20 Oct. 1992, *J. Morales & Q. Jiménez 891* (CR); Chepo de las Minas, *K.S. Walter 78-1518* (SEL), C. Luer illustr. 5237. **San José**: Vásquez de Coronado, Sendero La Botella, alt. 750 m, 21 Sept. 1990, *S. Ingram & K. Ferrell-Ingram 558* (CR, K, MO, SEL). **Puntarenas**: Carara Reserva, north fork of Quebrada Bonita, alt. 35-40 m, 31 Aug. 1985, *M. Grayum et al. 5939* (MO). Sine loc., ca. 1867, *A. Endres 46, 52* (illustr. at W.)
GUYANA: Roraibo, 7 Nov. 1894, *E.F. im Thurn 84* (K); Essequibo River, Moraballi Creek, near Bartica, near sea level, 15 Sept. 1929, *N.Y. Sandwith 304* (holotype of *P. pertenuis*: K; isotypes: AMES, NY); between Mazaruni Station and Labbakabra Creek, 27 Apr. 1937, *N.Y. Sandwith 1225* (K); Aruka, June 1897, *E.F. im Thurn 84* (K); Pomeroon River, Mar. 1884, *G.S. Jenman 1996* (K); Upper Mazaruni District, adjacent to Eboropu Mountain, alt. 470 m, 8 Apr. 1979, *P.J. Edwards 1188* (K).
SURINAME: Wilhelmina Mts., 15 July 1981, *R. Determann 81-2168* (SEL), C. Luer illustr. 6829.

This little species is morphologically variable in its wide distribution through Central America and across coastal South America. It is characterized by the tuft of very narrow leaves surpassed by a pubescent or scabrous peduncle that bears a single, bright orange flower that is usually followed by a another. The floral bracts, pedicel, ovary and external surfaces of the sepals are pubescent or scabrous in varying degrees. To be seen a strong glass is usually necessary. The sepals are acute, the laterals partially connate; the petals are acute with the lower margin dilated; and the lip is oblong with a small marginal angle or lobe below the middle on each side. The disc is channeled between calli.

Sarcinula guanacastensis (Ames & C.Schweinf.) Luer, comb. nov.

Bas.: *Pleurothallis guanacastensis* Ames & C.Schweinf., Sched. Orch. 10: 27, 1930.

Ety.: Named for the province of Guanacaste where the species is found.

Syn.: *Specklinia guanacastensis* (Ames & C.Schweinf.) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.

Plant medium in size, but large for the genus, epiphytic, caespitose, roots slender. Ramicauls slender, erect, 1-1.5 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, shortly petiolate, 5-9 cm long including the petiole 1-2 cm long, the blade elliptical, acute to subacute, 1.5-2.7 cm wide, cuneate below into the petiole. **Inflorescence** a fasciculate, successively several-flowered raceme, borne by a slender peduncle 2-3 cm long, from near the middle of the ramicaul; floral bracts imbricating, 3 mm long; pedicels 5-6 mm long; ovary 1.5 mm long; **sepals** red-orange to yellow-orange, fleshy, glabrous, subcarinate, the dorsal sepal oblong, acute, thickened toward the apex, concave below the apical third, 8-10 mm long, 3 mm wide, 3-veined, the lateral sepals connate to above the middle into an elliptical-obovate, bifid synsepal with acute tips, 8-9 mm long, 4.5-5 mm wide, forming a mentum with the column-foot, 6-veined; **petals** orange, thick, elliptical-obovate, acute to subacute, 3.75-4.5 mm long, 1.5-1.8 mm wide, 3-veined; **lip** orange, oblong, arcuate, cellular-verrucose, 3.75-4.5 mm long, 1-1.5 mm wide, with obtuse, marginal angles below the middle, the apex rounded, microscopically denticulate-erose, the disc shallowly channeled between longitudinal calli, the base subtruncate with a minute lobule at each corner, hinged beneath to the column-foot; **column** semiterete, 3.5 mm long, with the apex bidentate, the anther, rostellum and stigma ventral, the foot 2.5 mm long.

COSTA RICA: **Guanacaste**: Quebrada Serena, southeast of Tilarán, alt. ca. 700 m, *P.C. Standley & J. Valerio 46304* (Holotype: AMES); Los Ayotes, near Tilarán, alt. 600-700 m, 21 Jan. 1926, *P.C. Standley & J. Valerio 45504* (AMES); sine loc., flowered in cultivation at Kew, 434-1959, 19 May 1959, received from *C.H. Lankester s.n.* (K), C. Luer illustr. 17267; Rincón de la Vieja, Hda. Santa María, alt. 600-750 m, 17 Oct. 1987, *G. Herrera 886* (CR, MO). **Alajuela**: Upala, Colonia Puntarenas, del Salón Comunal al Río Chimuria, alt. 200 m, 11 Nov. 1987, *G. Herrera 1216* (CR, MO, SEL); Río Chimuria, alt. 80-100 m, 17 Nov. 1988, *M. Grayum 9053* (MO); Monteverde Reserve, Río Caño Negro, alt. 800 m, 19 Oct. 1989, *E. Bello 1394* (CR, MO).

NICARAGUA: Mombacho, Dec. 1938, *A. Garnier 1897* (AMES); sine loc., flowered in cultivation by J & L Orchids, Easton, CT, 20 Oct. 1976, *C. Luer 356* (SEL).

This species occurs infrequently and locally in Costa Rica. With its orange flower borne in a fascicle held by the peduncle to about midway the length of the leaf, it is superficially similar to *Sarcinula fulgens* (Rchb.f.) Luer. It is easily distinguished from the latter by the smaller habit, and an oblong lip without lateral lobes.

Sarcinula leptantha (Schltr.) Luer, comb. nov.

Bas.: *Pleurothallis leptantha* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 7: 107, 1920.

Ety.: From the Greek *leptanthos*, "thin, slender flower," referring to the flower.

Syn.: *Specklinia leptantha* (Schltr.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 261, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-17 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, narrowly elliptical, acute, 3-6 cm long including the petiole 0.5-1 cm long, 0.7-1.1 cm wide, narrowly cuneate below into the base. **Inflorescence** a lax, successively few-flowered raceme ca. 5 cm long including the slender peduncle 2.5-3 cm long, produced laterally from the

ramicaul; floral bracts 2-3 mm long; pedicels 5-6 mm long; ovary 2 mm long; **sepals** deep yellow, striped in orange, glabrous, carinate, the dorsal sepal elliptical-ovate, acute, concave, 5.5 mm long, 2 mm wide, 3-veined, the lateral sepals connate 3 mm to near the apex into a ovate, bifid, lamina with acute apices, 5.25 mm long, 3 mm wide, 6-veined, forming a small mentum with the column-foot; **petals** translucent, obovate, oblique, acute, 2.25 mm long, 1 mm wide, the lower margin dilated; **lip** orange, oblong-trilobed, 3 mm long, 0.6 mm wide, 1.2 mm wide across lobes expanded, cellular-glandular above the middle with the apex rounded, denticulate, the lateral lobes below the middle, erect, rounded, the disc shallowly sulcate between a parallel pair of verrucose calli along the middle third, the base truncate, hinged to the column-foot; **column** semiterete, longitudinally winged, 1.75 mm long, with a pair of apical teeth, the foot 1 mm long, the anther hooded, the stigma ventral.

COLOMBIA: **Magdalena**: Santa Marta, 1898-1899, *H.H. Smith 2554* (Holotype of *P. leptantha* presumably destroyed at B; Lectotype here designated: K, isolectotypes: AMES, CM, NY, US), C. Luer illustr. 17311; Sierra Madre de Santa Marta, Pueblo Bello, alt. 4,000 ft., 15 Apr. 1946, *M.B. Foster & E. Smith 1488* (AMES), C. Luer illustr. 19278.

This species is apparently endemic in the Sierra Madre de Santa Marta in northernmost Colombia. The small, caespitose plant is similar to that of many others [e.g. *Sarcinula brighamii* (S.Watson) Luer]. The flowers are borne in a loose, few-flowered raceme, an exception in the genus, the flowers being about five millimeters apart. The sepals are acute, the laterals connate either a little above or below the middle; the petals are acute with the lower margin dilated; the lip is verrucose above the middle and lobed below the middle with verrucose calli on the middle third.

Sarcinula psichion (Luer) Luer, comb. nov.

Bas.: *Pleurothallis psichion* Luer, Lindleyana 11: 89, 1996.

Ety.: From the Greek *psichion*, "a tiny bit or crumb," referring to the insignificant plant.

Syn.: *Specklinia psichion* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, caespitose; roots proportionately thick. Ramicauls short, erect, 6-10 mm long, enclosed by a loose tubular sheaths, and another sheath at the base. **Leaf** erect, thickly coriaceous, linear-oblong, convolute, acute, subpetiolate, 2-3 cm long, 2-3 mm wide, narrowly cuneate below to the base. **Inflorescence** a fascicle of single-flowered pedicels, 7-14 mm long, borne from a peduncle 1-2 mm long, from the ramicaul within the sheath; floral bracts 3-4 mm long; ovary 4-7 mm long; flowers stated to be dull orange; **sepals** subcarinate, the dorsal sepal narrowly ovate-triangular, acute, 7.5 mm long, 3 mm wide, 3-veined, the lateral sepals narrowly ovate-triangular, oblique, acute, connate 2 mm to below the middle, 6.5 mm long, 3 mm wide together, 6-veined; **petals** membranous, obovate, oblique, acute, 3 mm long, 1.4 mm wide, with the labellar margin dilated; **lip** fleshy, oblong, arcuate, 3.5 mm long, 0.8 mm wide, longitudinally channeled with the sides of the lip more or less erect and thickened below the middle, the base decurved, hinged to the column-foot; **column** thick, semiterete, denticulate at the apex, 2 mm long, the foot 1 mm long, the anther and stigma hooded and ventral.

COSTA RICA: **Cartago**: Chitaria, sent to L.O. Williams by *C.H. Lankester s.n.* (Holotype: SEL).
VENEZUELA: sine loc., cultivated in Eindhoven, The Netherlands, by P. Oversteegen s.n., 24 July 1998, *C. Luer 18867* (MO).

About 50 years ago, a specimen of this species was sent from Costa Rica by Charles Lankester to Louis Williams. In the accompanying undated letter he stated, "flowers closed up, are dull orange like many other little doodads." It is known from no other Central American collection, but a plant reportedly from Venezuela without collection data and cultivated by Pieter Oversteegen in the Netherlands, appears to be the same species.

The plants are distinguished by small, slender, thick leaves borne by abbreviated ramicauls that are concealed by loose sheaths. The roots are proportionately thick for the size of the plant. The flowers are produced successively on single-flowered, elongated pedicels from a very short peduncle arising from the ramicaul within the sheath. The only flowers present on Lankester's specimen were already in past prime condition, as was noted by him. Nevertheless, they were in reasonably good condition for hydration and dissection, although the column was swollen. The sepals are acute; the petals two-veined are ventricose; and the oblong lip is arcuate, channeled and more or less conduplicate below the middle.

Sarcinula purpurella (Luer) Luer, comb. nov.

Bas.: *Pleurothallis purpurella* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 76: 176, 1999.

Ety.: From the Latin *purpurellus*, "purple, small," referring to the flower.

Syn.: *Specklinia purpurella* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical, acute, 15-30 mm long including a petiole ca, 5 mm long, 3-4 mm wide, gradually narrowed below into the subpetiolate base. **Inflorescence** a congested fascicle of single, successive flowers, borne by a slender, erect peduncle 20-35 mm long; pedicels 2.5 mm long; floral bracts thin, tubular, imbricating, 2 mm long; ovary 0.75 mm long; **sepals** membranous, purple, subcarinate, glabrous, the dorsal sepal oblong, subacute, 2.6 mm long, 1 mm wide, 3-veined, the lateral sepals connate above the middle into an elliptical, bifid lamina, 2.6 mm long, 1.8 mm wide, 4-veined, the apices acute; **petals** translucent purple, obovate-spathulate, oblique, 1.5 mm long, 0.5 mm wide, 1-veined, the apex obtuse, obscurely lobed, with the labellar margin dilated; **lip** purple, fleshy, oblong-ovoid, narrowed in the basal fourth into a claw, minutely erose-denticulate, 1.5 mm long, 0.5 mm wide, the apex minutely verrucose, rounded, the disc shallowly concave, the base narrowly truncate, with a minute lobule at each corner, hinged to the column-foot; **column** slender, 1.25 mm long, narrowly longitudinally winged, bidentate at the apex, the foot 1 mm long without calli, the anther and stigma ventral.

COLOMBIA: **Valle del Cauca**: Río Dagua, 20 Sept. 1883, *F.C. Lehmann 1043* (Holotype: K), C. Luer illustr. 16395.

This small species, known from only the type-collection by Lehmann in the nineteenth century, is apparently limited in distribution to the western slopes of the Western Cordillera of Colombia. It is one of many species related to *Sarcinula brighamii* (S.Watson) Luer, but it is distinguished from the latter by the small habit; very small, purple flowers; an unguiculate lip; and a column-foot devoid of calli.

Sarcinula scolopax (Luer & R.Escobar) Luer, comb. nov.

Bas.: *Pleurothallis scolopax* Luer & R.Escobar, Orquideología 14: 172, 1981.

Ety.: From the Latin *scolopax*, "a snipe, a small, long-beaked waterbird," in allusion to the appearance of the flower.

Syn.: *Specklinia scolopax* (Luer & R.Escobar) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, abbreviated, 5-15 mm long, enclosed by 2-3 close, tubular sheaths. **Leaf** erect, coriaceous, narrowly elliptical-obovate, subacute, 3-7 cm long, 7-11 mm wide, gradually narrowed below to the indistinctly petiolate base. **Inflorescence** a congested, subfasciculate, secund raceme, up to 1 cm long of successive, solitary flowers borne by a weak, suberect, filamentous peduncle, 4-7.5 cm long, from a node on the ramicaul; floral bract thin, 3 mm long; pedicel 5-6 mm long; ovary 2 mm long; **sepals** membranous, glabrous, translucent yellow with the veins dark purple, the dorsal sepal very narrowly triangular-linear, narrowly obtuse, 17-21 mm long, 2 mm wide, 3 veined, the lateral sepals connate to near the apices into a linear, bifid lamina 17-21 mm long, 3.5 mm wide expanded, 6-veined; **petals** ovate, oblique, acute, 2.25 mm long, 1 mm wide, the labellar margin dilated, suffused with red-brown on orange with 2 purple veins; **lip** red-brown, cellular-glandular, oblong, 2.2 mm long, O.75 mm wide, the sides obtusely angled below the middle, the apex rounded, the truncate base hinged to the column-foot, with a pair of basal lobules, the disc with a parallel pair of slightly irregular calli ending at the lateral angles; **column** green, 2 mm long, with a pair of broad, serrulate wings, the foot with a pair of tuberosities.

COLOMBIA: **Chocó**: Munic. of Bahia Solano, Mecana arriba, alt. 300 m, collected by G. Misas et al., 1975, cultivated by Luis Carlos Vieira in Medellín, cult. 7 April 1975, *R. Escobar 1518* (Holotype: JAUM); flowered 15 Oct. 1977, *C.Luer 2036* (Clonotype: SEL); sine loc. cultivated at Colomborquídeas, 25 Apr. 1988, *C. Luer 13308*.

This species is distinguished by the tuft of narrowly obovate leaves and a slightly shorter peduncle that bears in succession a narrowly bilabiate flower. The raceme is a very congested, secund raceme that is practically fasciculate. The dorsal sepal and synsepal are long, narrow, and striped in purple. The petals are dilated on the lower margin. The lip is small, oblong, obtusely angled on the margins below the middle, and the base is bilobulate.

Sarcinula simmleriana (Rendle) Luer, comb. nov.

Bas.: *Pleurothallis simmleriana* Rendle, J. Bot. 38: 274, 1900.
Ety.: Named by request for the gardener, M. Paul Simmler, under whose care this species flowered.

Syn.: *Pleurothallis periodica* Ames, Sched. Orch. 7: 21, 1924.
Ety.: From the Latin *periodicus*, "periodic," referring to the successively flowered inflorescence.

Syn.: *Specklinia periodica* (Rendle) Pridgeon & M.W.Chase, Lindleyana 16: 258, 2001.
Syn.: *Specklinia simmleriana* (Rendle) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-4 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, narrowly elliptical, acute to subacute, 2-5 cm long including an indistinct petiole ca. 5 mm long, 3-7 mm wide, gradually narrowed below into the subpetiolate base. **Inflorescence** a single flower produced successively in a congested fascicle, borne by a slender peduncle 4-6 cm long; pedicels 5-7 mm long; floral bracts thin, imbricating, 3-4 mm long; ovary 1.5-2 mm long; **sepals** membranous, glabrous, low-carinate, yellow with purplish veins, the dorsal sepal oblong, acute, concave below the middle, with the sides more or less revolute above the middle, 7-8.5 mm long, 2-2.5 mm wide, 3-veined, the lateral sepals oblong, acute, with the sides revolute above the middle, 7-8 mm long, 2-3 mm wide, 3-veined, connate below the middle; **petals** translucent with purple veins, obovate, oblique, acute, 3-4 mm long, 1-1.25 mm wide, 3-veined, the labellar margin slightly dilated; **lip** purple, fleshy, oblong, 3.25-4.5 mm long, 1.25-2 mm wide, with low, obtuse, marginal angles between the middle and basal thirds, the apex obtuse to rounded with the margins minutely denticulate-erose, the disc shallowly sulcate between a pair of low, parallel calli along the middle two-thirds, glandular-cellular, the base truncate, minutely bilobulate, hinged to the column-foot; **column** green, suffused with purple, stout, 2.5 mm long, longitudinally winged, dentate at the apex, the foot ca. 1 mm long, the anther and stigma ventral.

COSTA RICA: sine loc., flowered in cultivation by M.W. Barbey at Chamblésy, near Geneva, Apr. 1900, *A. Tonduz s.n.* (Holotype: G; Isotype: BM). **Cartago**: Peralta, alt. 1,000 ft., 13 July 1923, *C.H. Lankester 463* (holotype of *P. periodica*: AMES); Reventazón, near sea level, Oct. 1924, *C.H. Lankester 963* (AMES); vicinity of Pejivalle, alt. 900 m, 7-8 Feb. 1926, *P.C. Standley & J. Valerio 46942, 46960, 46964, 47027, 47101, 47210* (AMES); Río Reventazón, near Turrialba, alt. 400 m, 20 June 1949, *R.W. Holm & H.H. Iltis 43* (AMES). **Puntarenas**: road to Monteverde TV tower, alt. 1650 m, 20 Mar. 1995, *C. Luer, J. Luer, J. Atwood & W. Rhodehamel 17437* (MO). **Heredia**: La Selva, Sarapiqui region, alt. 150 m, 31 Aug. 1961, *C. Weber 6133* (AMES). **Alajuela**: Sarapiquí, Parqué Nac. Braulio Carrillo, Est. Magsasay, alt. 150 m, 19 Oct. 1990, *S. Ingram & K. Ferrell-Ingram 612* (AMES, CR, F, K, MO, SEL). **Limón**: Río Reventazón below Cairo, Finca Hamburg, alt. 55 m, 19 Feb. 1926, *P.C. Standley & J. Valerio 48721, 48856* (AMES). Río Madre de Dios on Waldeck Farm, 7 Apr. 1930, *C.W. Dodge & F. Nevermann 7335* (AMES),
HONDURAS: **Atlántida**: Lancetilla Valley, near Tela, alt. 20-600 m, 6 Dec. 1927, *P.C. Standley 52989, 53209, 53375, 53861, 54823, 56561* (AMES). **Cortes**: Río Lindo, alt. 2,200 ft., 13 Sept. 1933, *J.B. Edwards 549* (AMES); Santa Cruz de Yojoa, alt. 2,000 ft., 5 Nov. 1933, *J.B. Edwards 581* (AMES). **Comayagua**: Pito Solo, Lake Yojoa, alt. 2,000 ft., 30 Aug. 1932, *J.B. Edwards 105a* (AMES); Cerro El Tigre, alt. 5,000 ft., collected by Matthews, flowered in cultivation Jan. 1975, *C. Luer 285* (SEL).
PANAMA: **Bocas del Toro**: 29 July 1940, *H. Wedel 185* (AMES, MO).
COLOMBIA: **Chocó**: Bahia Solano, Pueblo Rico, Morroto Taibá, flowered in cultivation by M. & O. Robledo at La Ceja, 7 Oct. 1977, *C. Luer 1942* (SEL).

This species was described from a plant collected in Costa Rica by Tonduz and cultivated by M.W. Barbey at Chamblésy, near Geneva, in 1900. Ames made an illustration from an isotype at BM, in Nov. 1922, two years before he described *Pleurothallis periodica* [=*Sarcinula simmleriana* (Rendle) Luer]. It is no doubt conspecific with *P. periodica*, which was described much later by Ames. It is characterized by the small, caespitose habit with narrow leaves surpassed by a slender peduncle that bears a fascicle of peduncles at the summit. The distinctive sepals are acute and prominently striped with dark purple. The sides of the laterals recurve above the lower third. The petals are acute and similarly striped. The lip is oblong with longitudinal, verrucose calli, and with the obtuse apex denticulate.

Dried herbarium specimens can be easily confused with *Sarcinula brighamii* (S.Watson) (Luer). Therefore, some of the collections cited could be either of the two species.

Sarcinula striata (H.Focke) Luer, comb. nov.

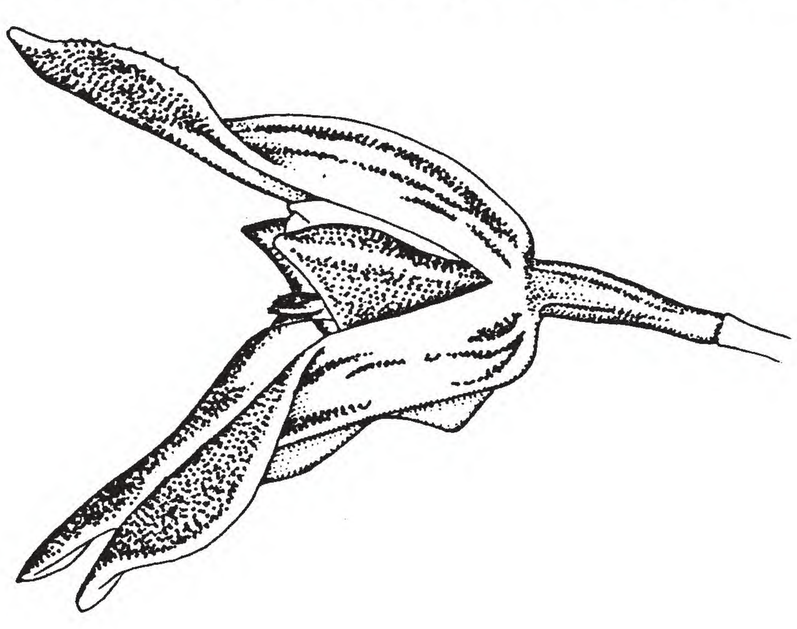
Bas.: *Pleurothallis striata* H.Focke, Tijdschr. Wis-Natuurk. Wetensch. 4: 63, 1851.
Ety.: From the Latin *striatus*, "striated," referring to the striped sepals.

Syn.: *Specklinia striata* (H.Focke) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Plant small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 3-7 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, narrowly elliptical-obovate, subacute, 2-4 cm long including an indistinct petiole 1-1.5 cm long, the blade 0.5-1 cm wide, gradually narrowed below into the subpetiolate base. **Inflorescence** a congested raceme of successive flowers, borne by a capillary peduncle, 3-4.5 cm long, from the ramicaul; floral bracts imbricating, thin, tubular, acuminate, 2-4 mm long; pedicels 3-6 mm long; ovary 1-2 mm long; **sepals** membranous, glabrous, low-carinate, yellow to orange or tan, usually with darker orange, purple or red stripes, the dorsal sepal oblong-ovate, acute to subacute, concave, 6-7 mm long, 2-2.75 mm wide, 3-veined, the lateral sepals connate into an ovate, shortly bifid synsepal with acute apices, 5.5-6 mm long, 3-4 mm wide, 6-veined; **petals** translucent light yellow with red veins, obovate, acute, oblique, dilated on the labellar margin, 3-3.5 mm long, 1.5 mm wide, 2-veined; **lip** orange, sometimes suffused in red, fleshy, microscopically spiculate, oblong, 3-4 mm long, 1-1.5 mm wide, with obtuse, marginal angles between the middle and basal thirds, the apex rounded with the margins minutely denticulate-erose, the disc shallowly sulcate between a pair of low, minutely denticulate, parallel calli above the middle, the base truncate, minutely bilobulate, hinged to the column-foot; **column** slender, 2-2.75 mm long, longitudinally winged, bidentate at the apex, the foot ca. 1 mm long, the anther and stigma ventral.

SURINAME: Paramaribo, Mar. 1850, *H.C. Focke 77* (Holotype: W); near Paramaribo, Sept. 1844, *Kegel 627* (BR, W); Paramaribo, 15 Nov. 1852, colored illustration by *H.C. Focke s.n.* (K); Paramaribo, *Wullschlaegel 1587* (BR, W); Beaufort, 1849, *Wullschlaegel 1081* (M, W);
GUYANA: 1898, *E.F. im Thurn 34* (K); Arawak Matope Falls, Oct. 1904, *A.W. Bartlett 8399* (K); Essequibo River, Moraballi Creek near Bartica, alt. near sea level, 15 Oct. 1929, *N.Y. Sandwith 461* (K); between Mazaruni Station and Labbakabra Creek, 27 Aug. 1937, *N.Y. Sandwith 1224* (K).
FRENCH GUIANA: Piste St. Elie, Km. 15, alt. 100 m, 13 May 1986, *C. Luer, J. Luer & D. Barthelemy 12255* (MO); Barrage de Petit Saut, Bassin du Sinnmary, alt. 50 m, 21 June 1994, *G. Cremers 13321* (CAY).
PANAMA: **Chiriquí**: Fortuna dam site, flowered in cultivation at SEL, 1977, *C. Luer 1389* (SEL). **Bocas del Toro**: collected by E. Olmos, cultivated at Finca Dracula, Cerro Punta, Nov. 1998, *C. Luer 18961* (MO).
COLOMBIA: **Cauca**: collected near Popayán, flowered in cultivation in Popayán by Amalia Lehmann de Sarria, 25 July 1978, *C. Luer 3007* (SEL).
ECUADOR: **Zamora-Chinchipe**: Cordillera del Condor, flowered in cultivation by Ecuagenera, 11 Jan. 2004, *A. Hirtz 8662* (MO).

This species was first collected in Suriname and accurately illustrated and described by Focke in 1844. In his *Folia Orchidacea* of 1859, Lindley recognized *Pleurothallis striata* [=*Sarcinula striata* (H.Focke) Luer] as distinct from *P. corniculata* [=*S. corniculata* (Sw.) Luer]. *Sarcinula striata* is widely distributed across northern South America and into Panama. It is characterized by narrow leaves surpassed by a slender peduncle that bears a fascicle of successive flowers. The sepals are usually orange and striped with darker orange or red; the petals are dilated on the labellar margin; and the minutely spiculate lip is oblong with low, obtuse marginal angles on the lower third. It is commonly confused with *S. corniculata* which is most easily distinguished by the long-pedicellate, one or occasionally two-flowered inflorescence.



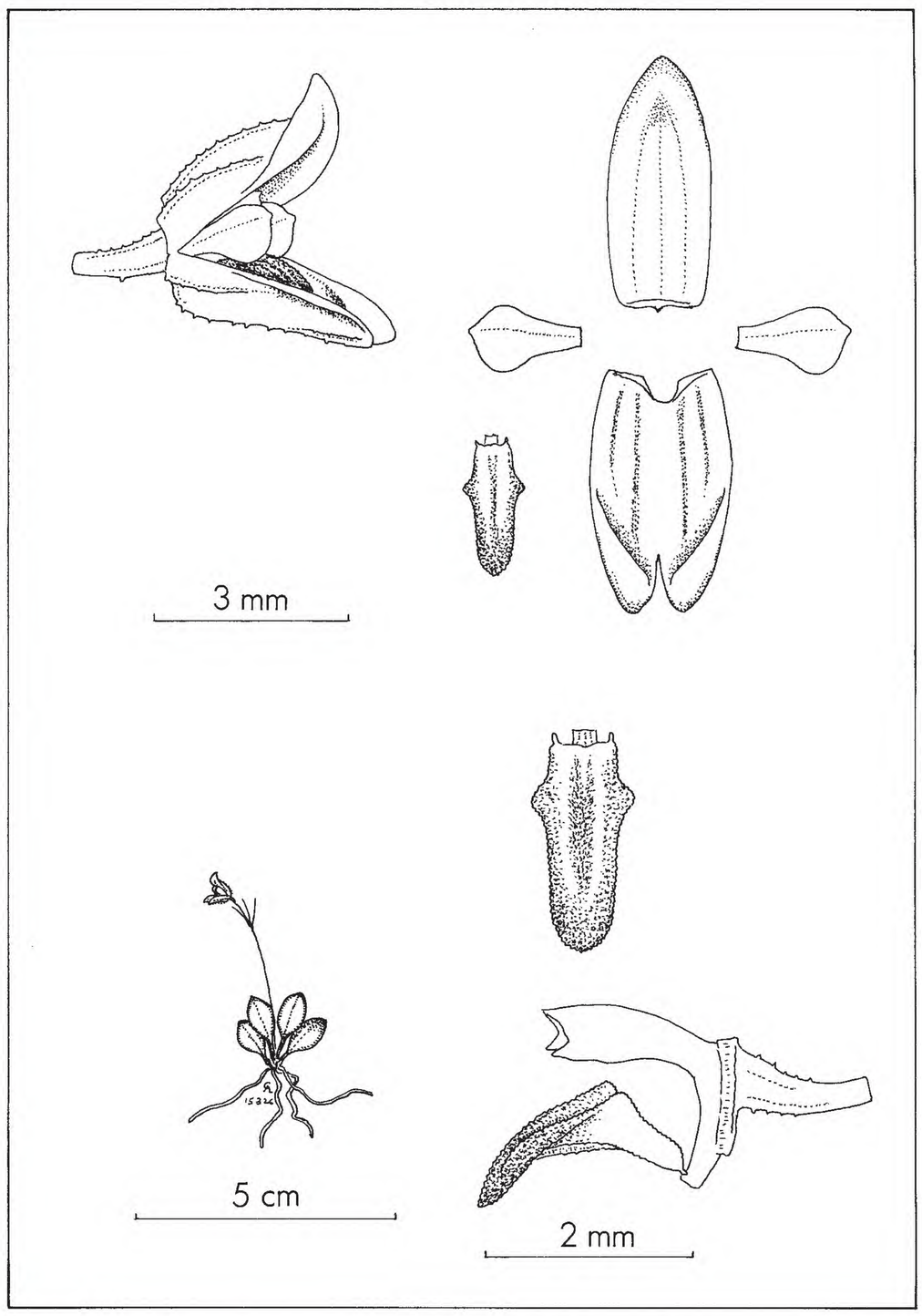


Fig. 154a. Sarcinula acanthodes

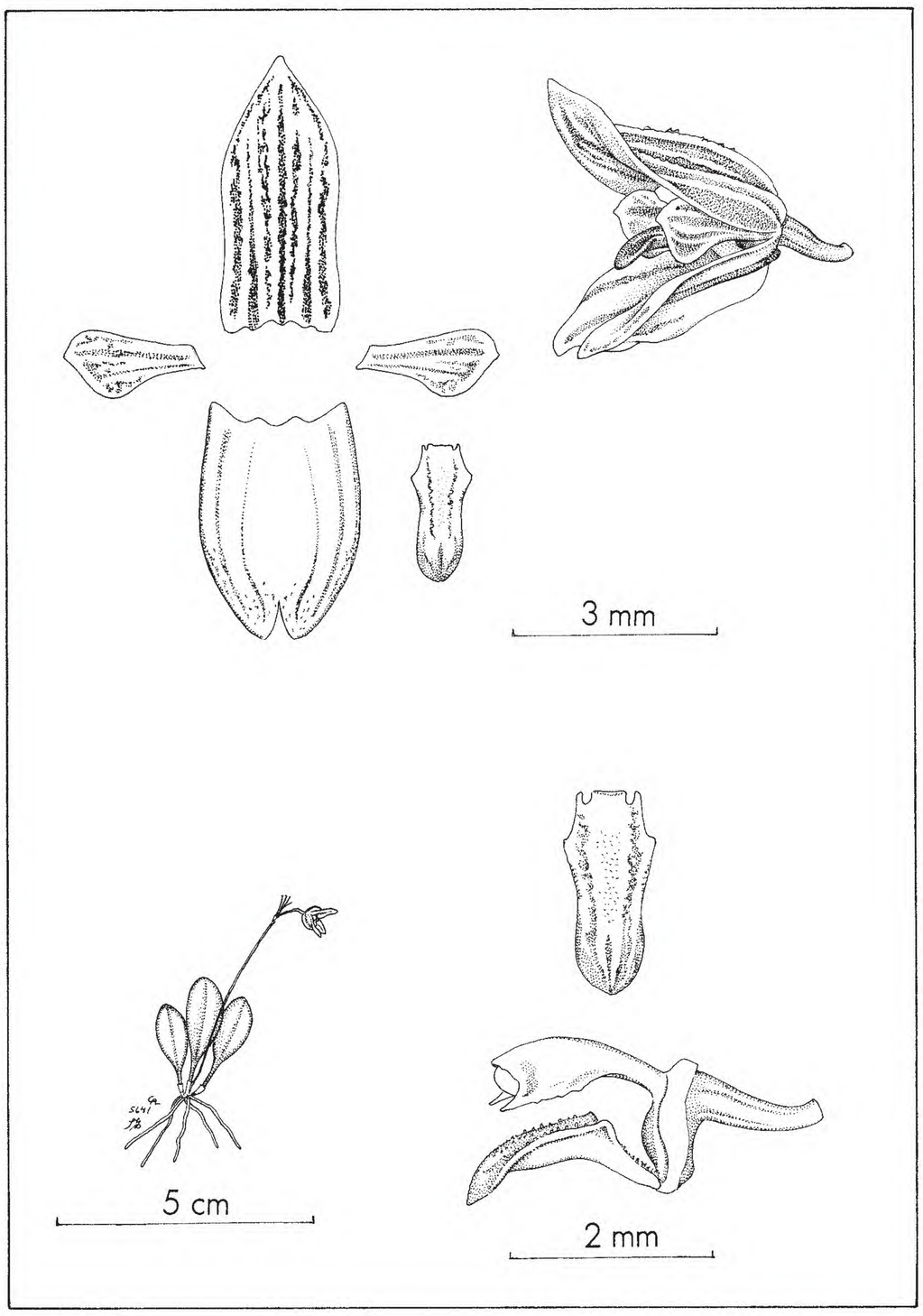


Fig. 154b. Sarcinula acanthodes

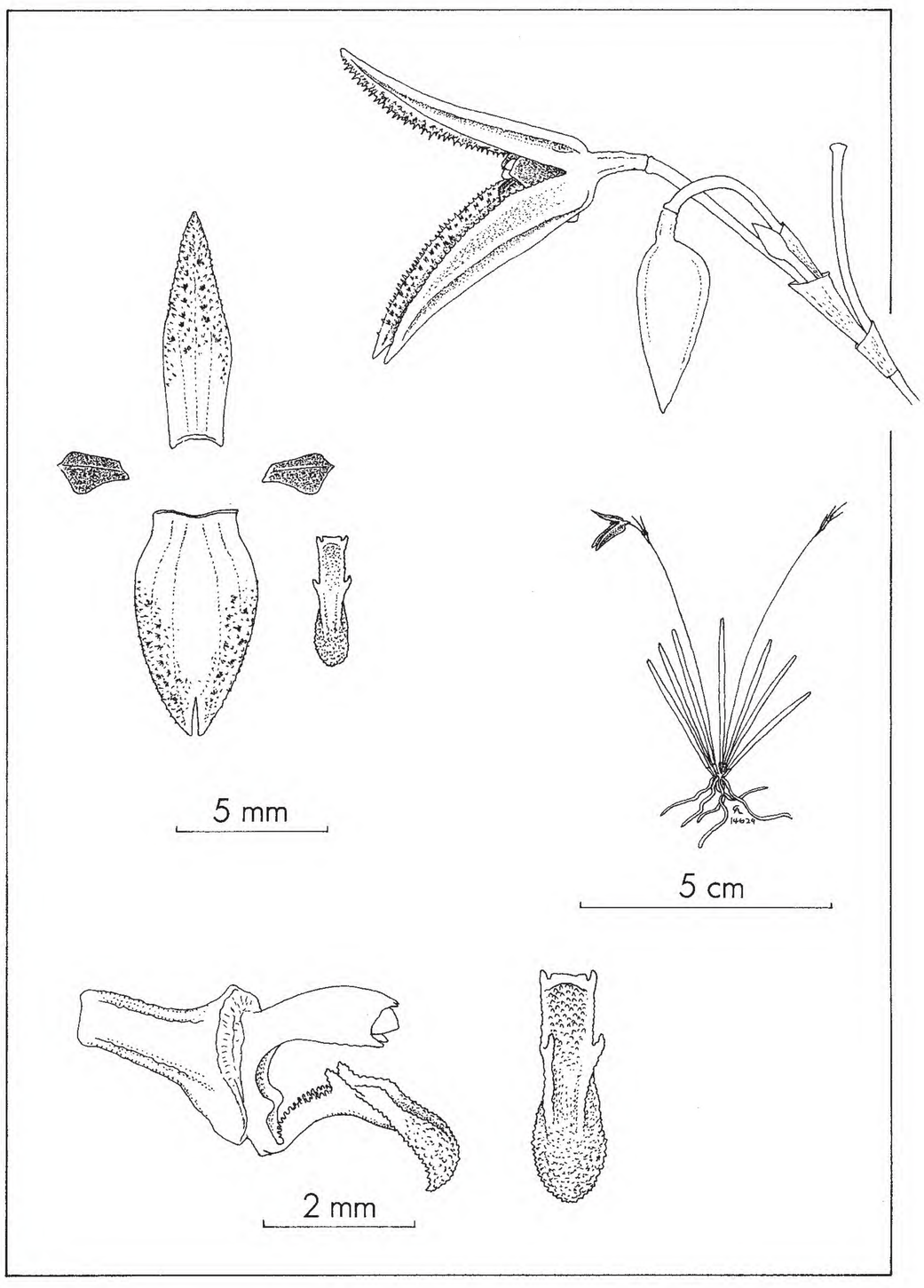


Fig. 155. Sarcinula acicularis

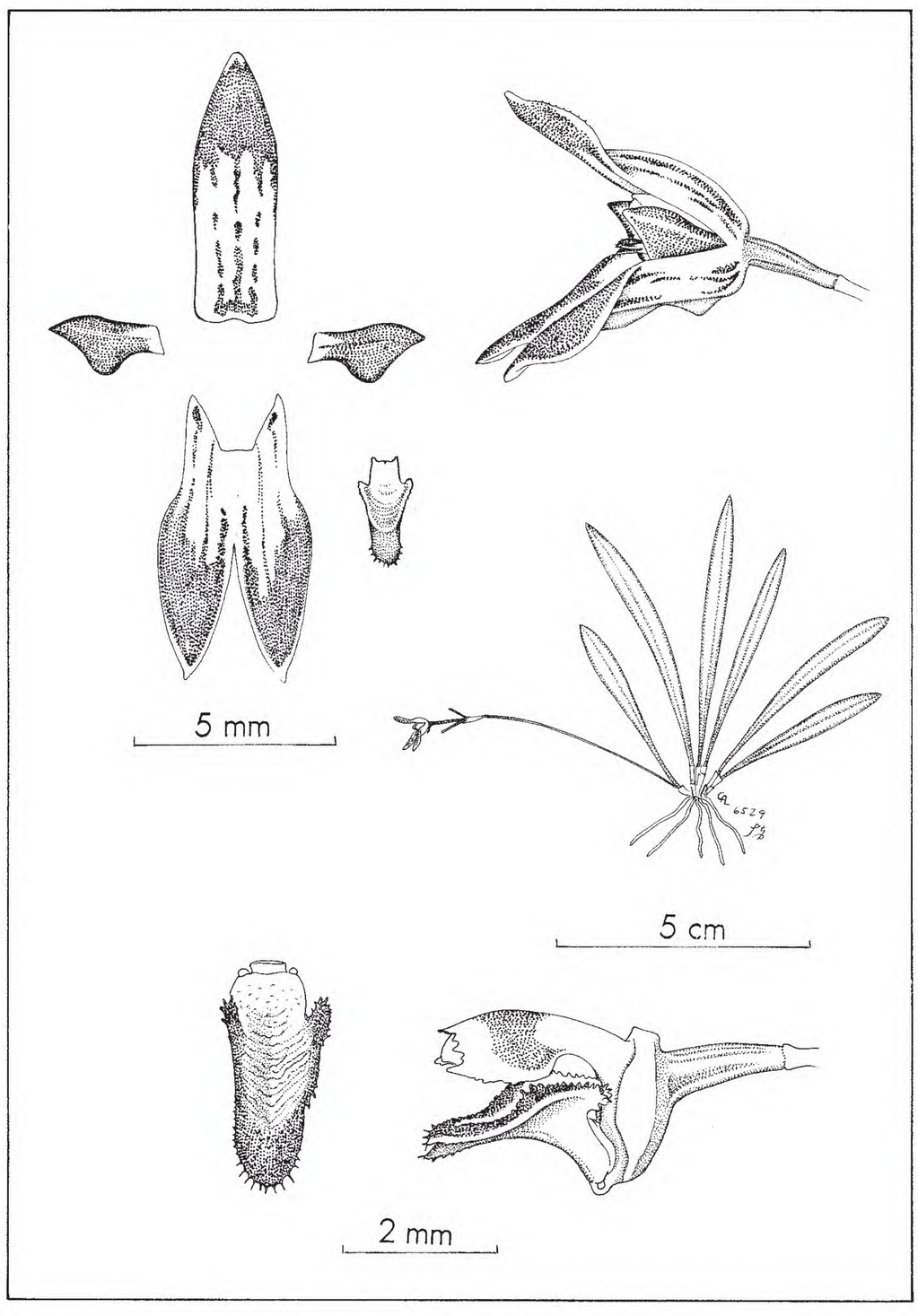


Fig. 156. Sarcinula acrisepala

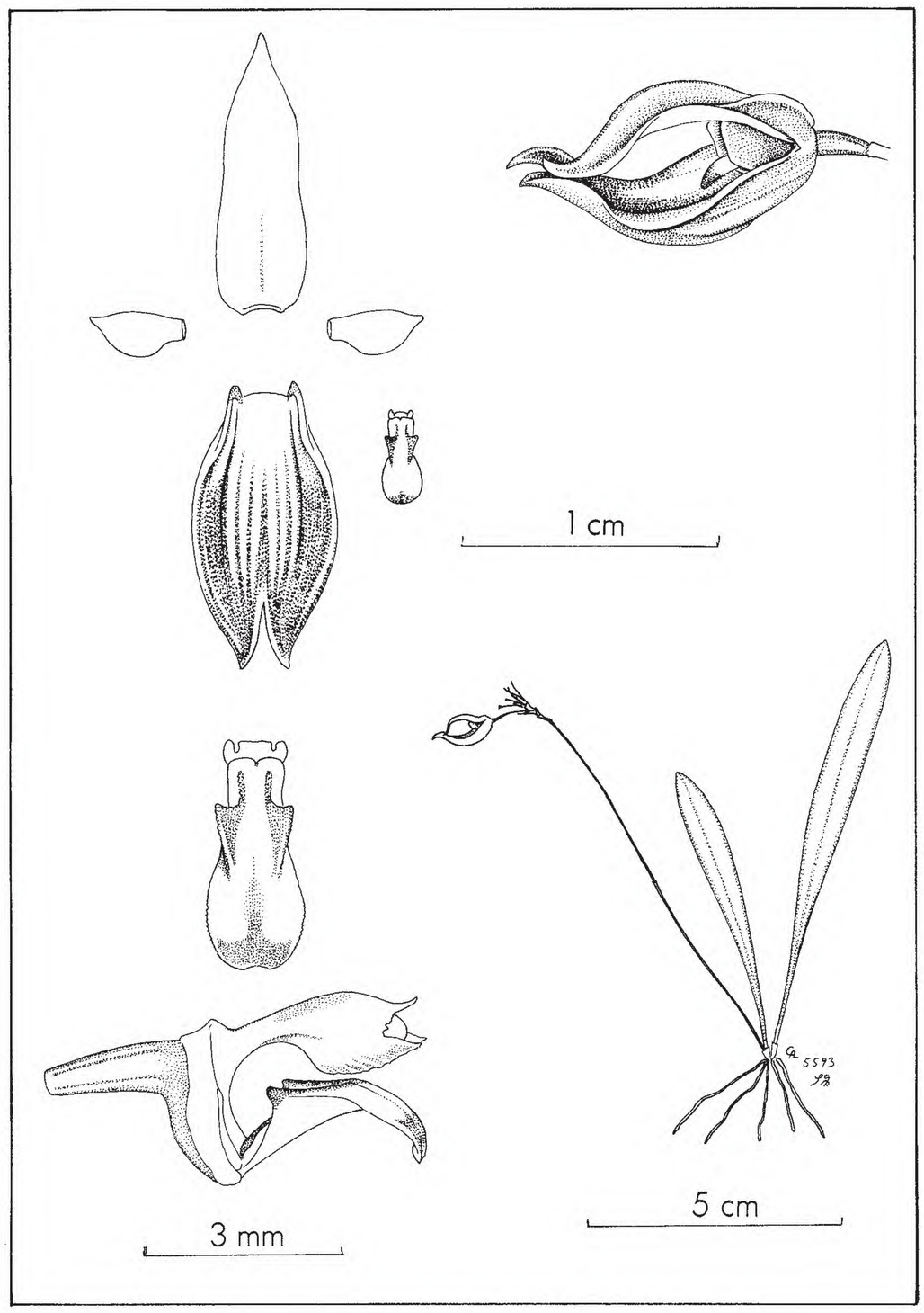


Fig. 157. Sarcinula alexii

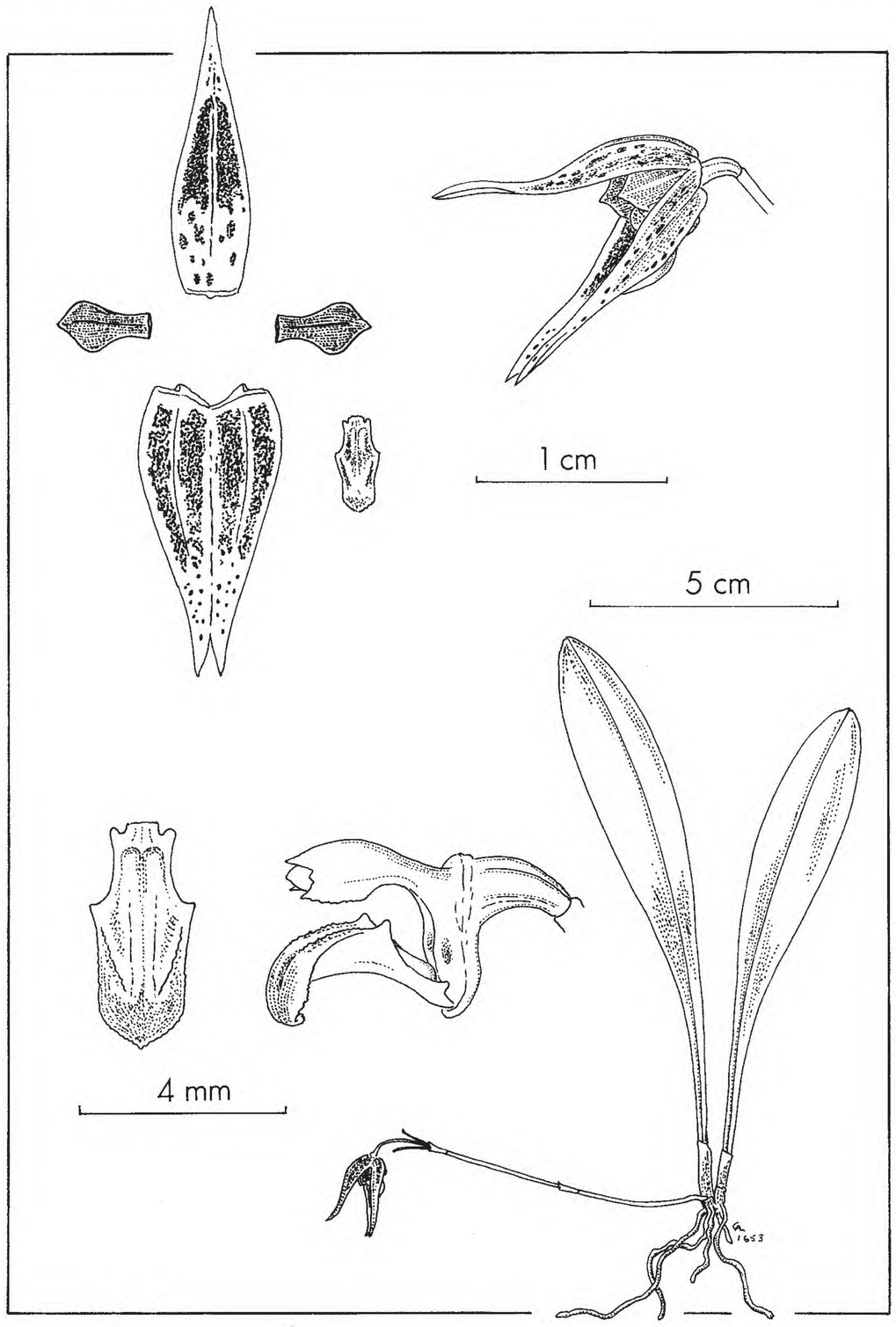


Fig. 158. Sarcinula areldii

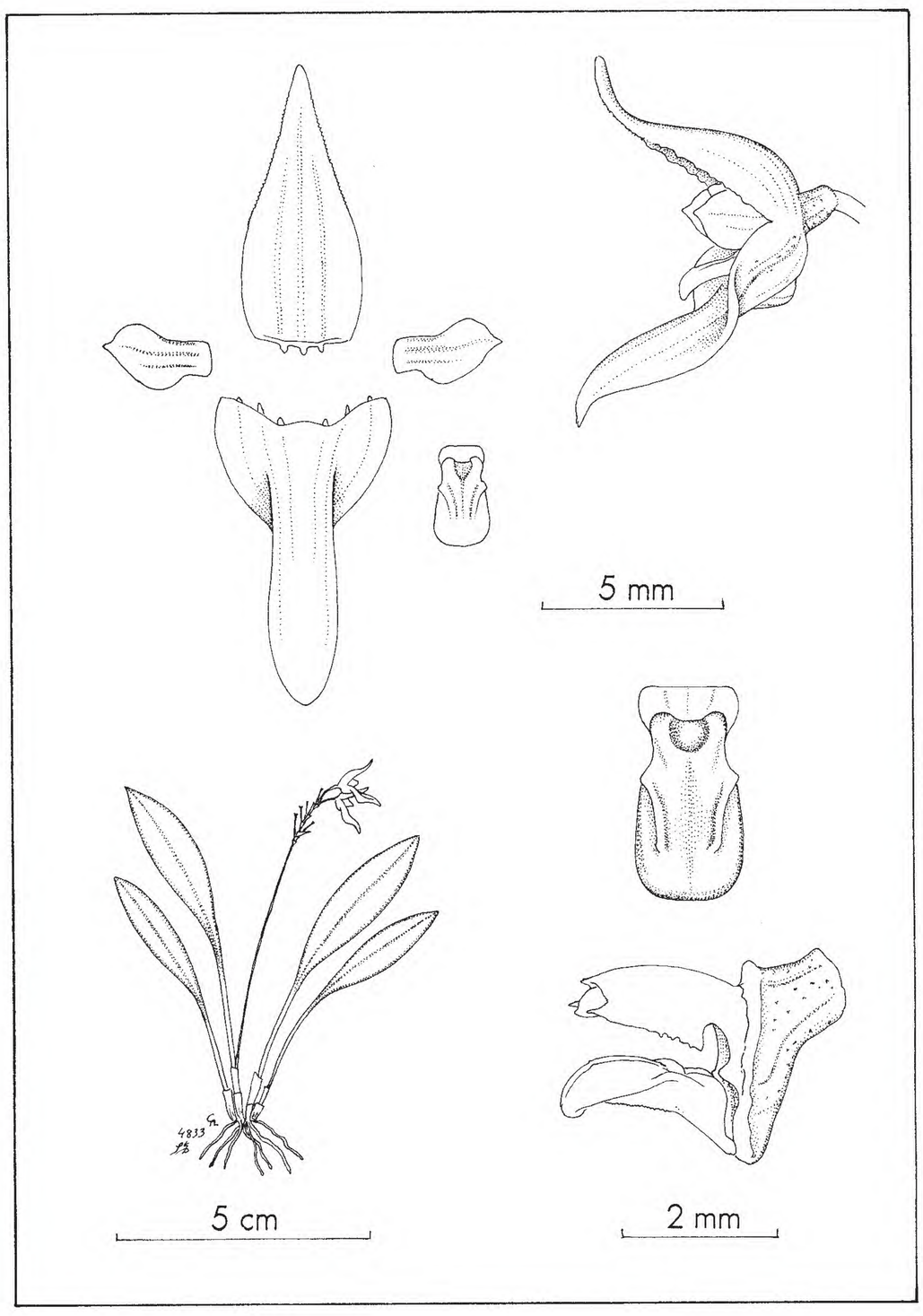


Fig. 159. Sarcinula barbae

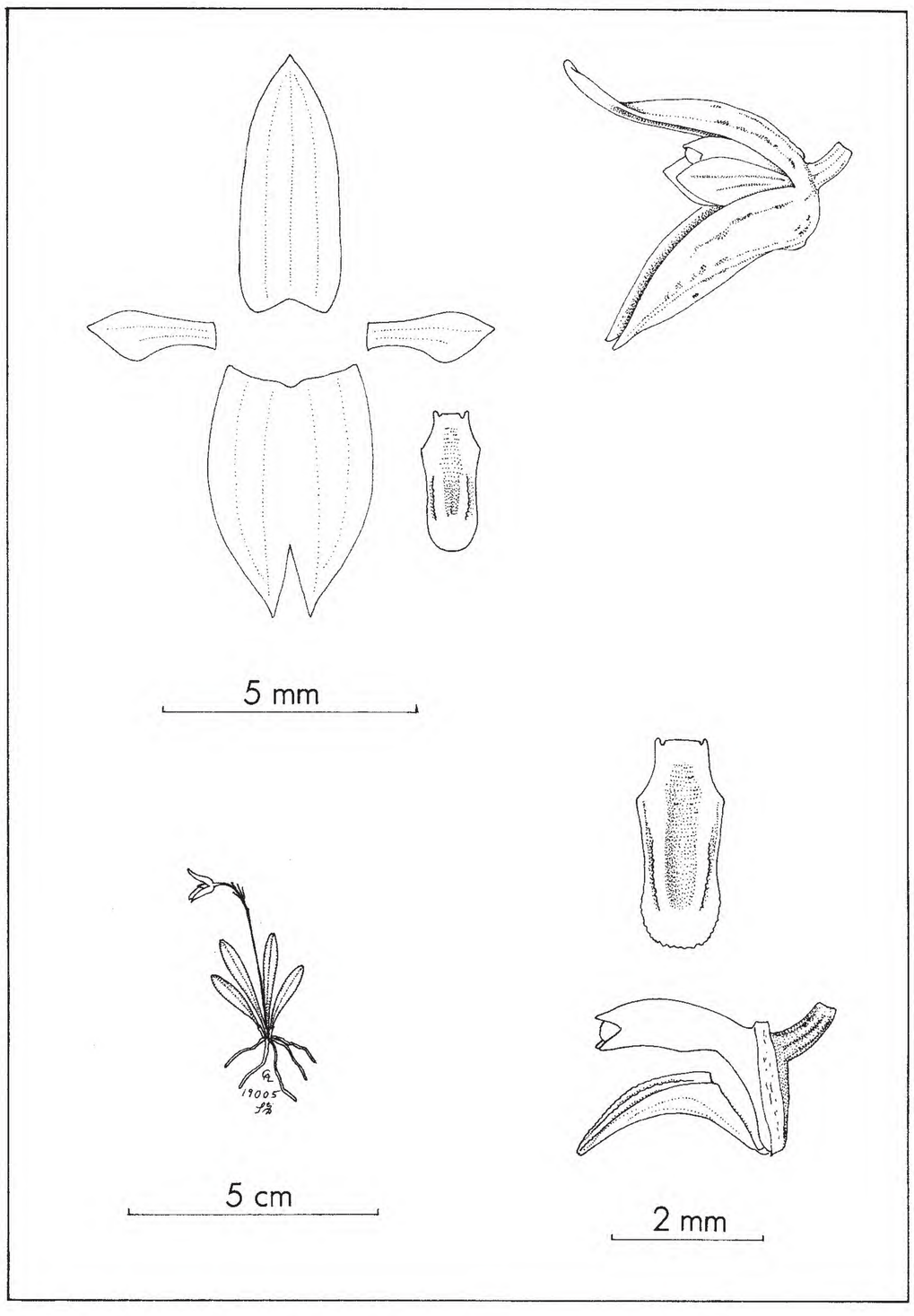


Fig. 160. Sarcinula brighamella

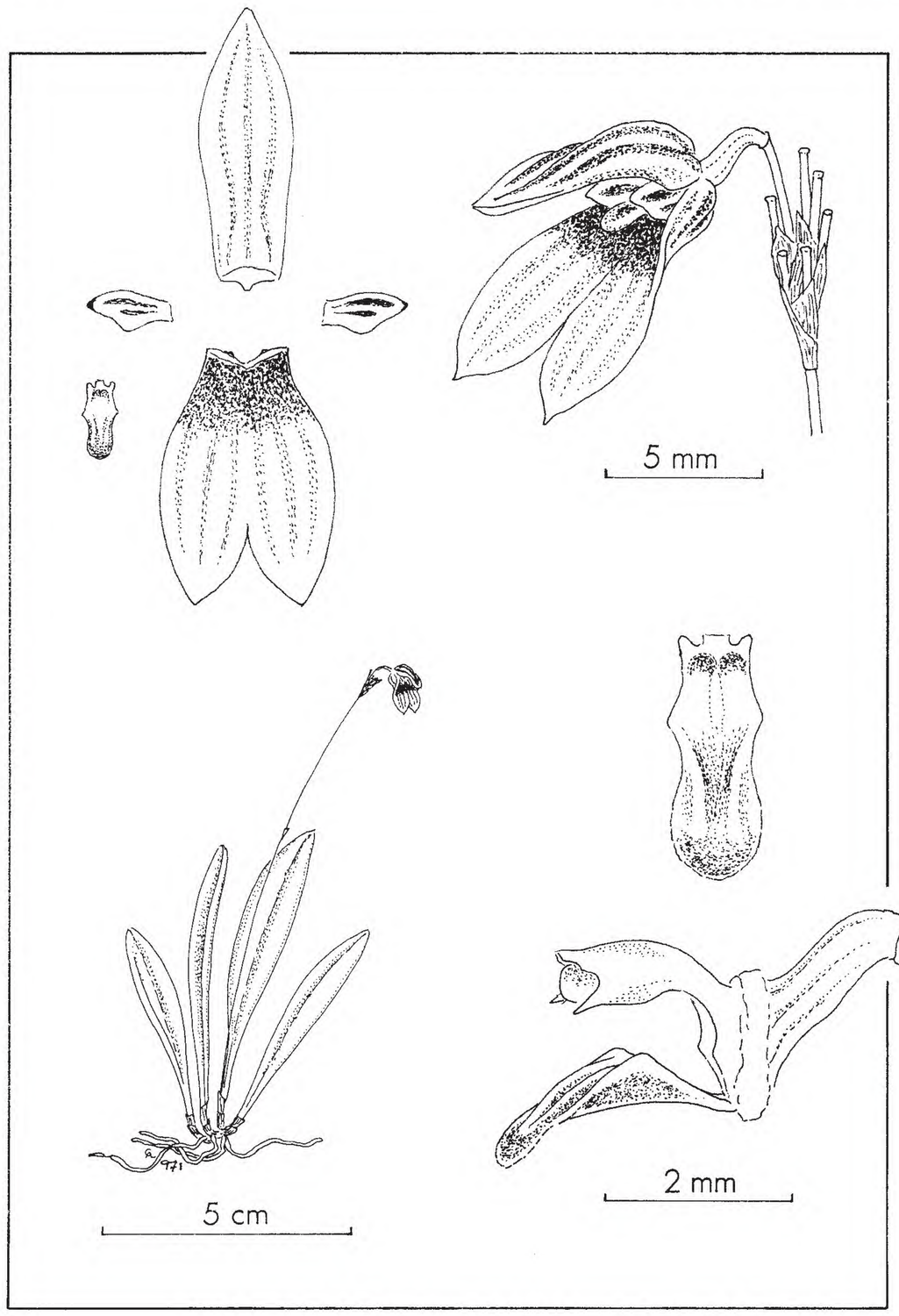


Fig. 161. Sarcinula brighamii

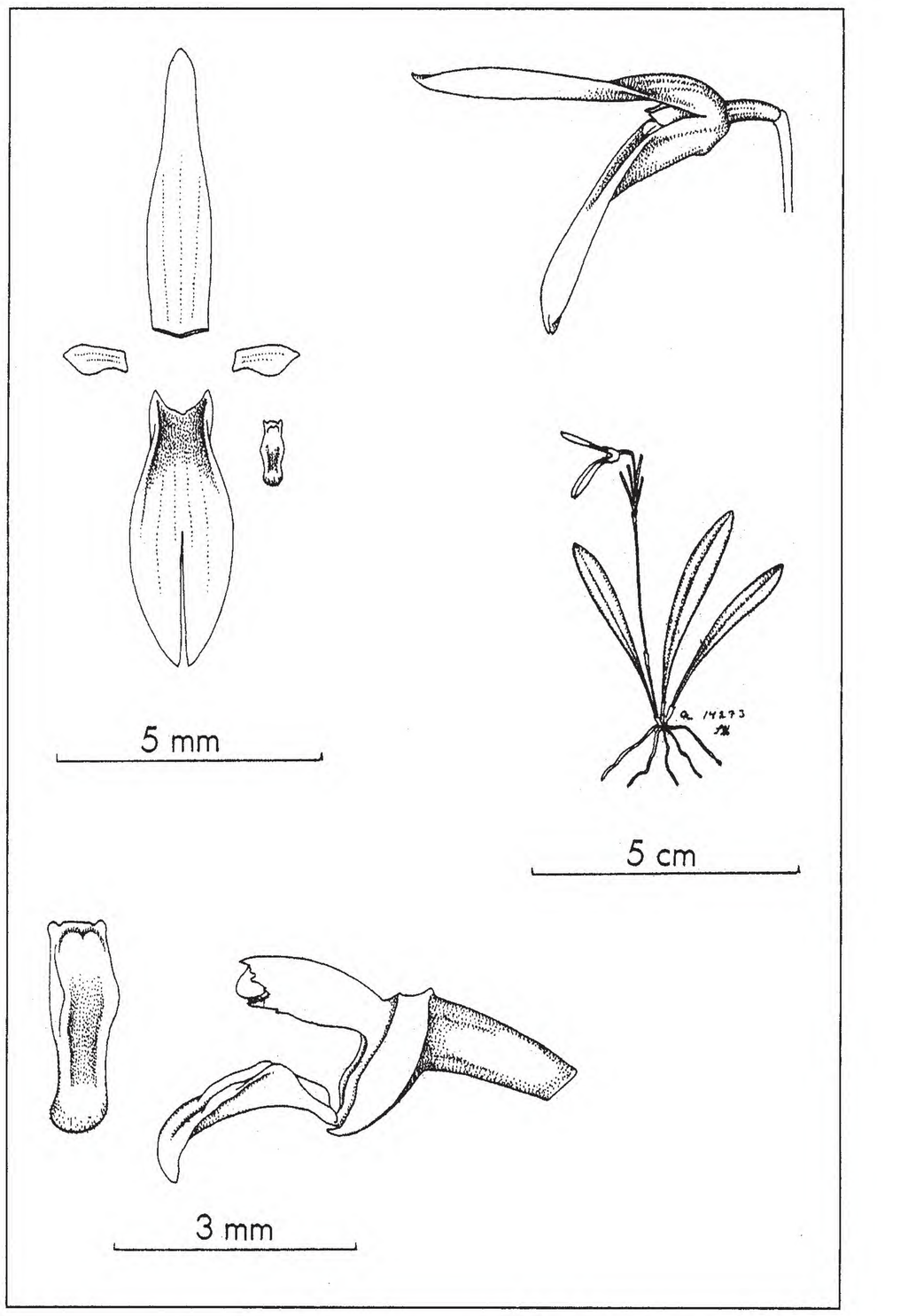


Fig. 162. Sarcinula calderae

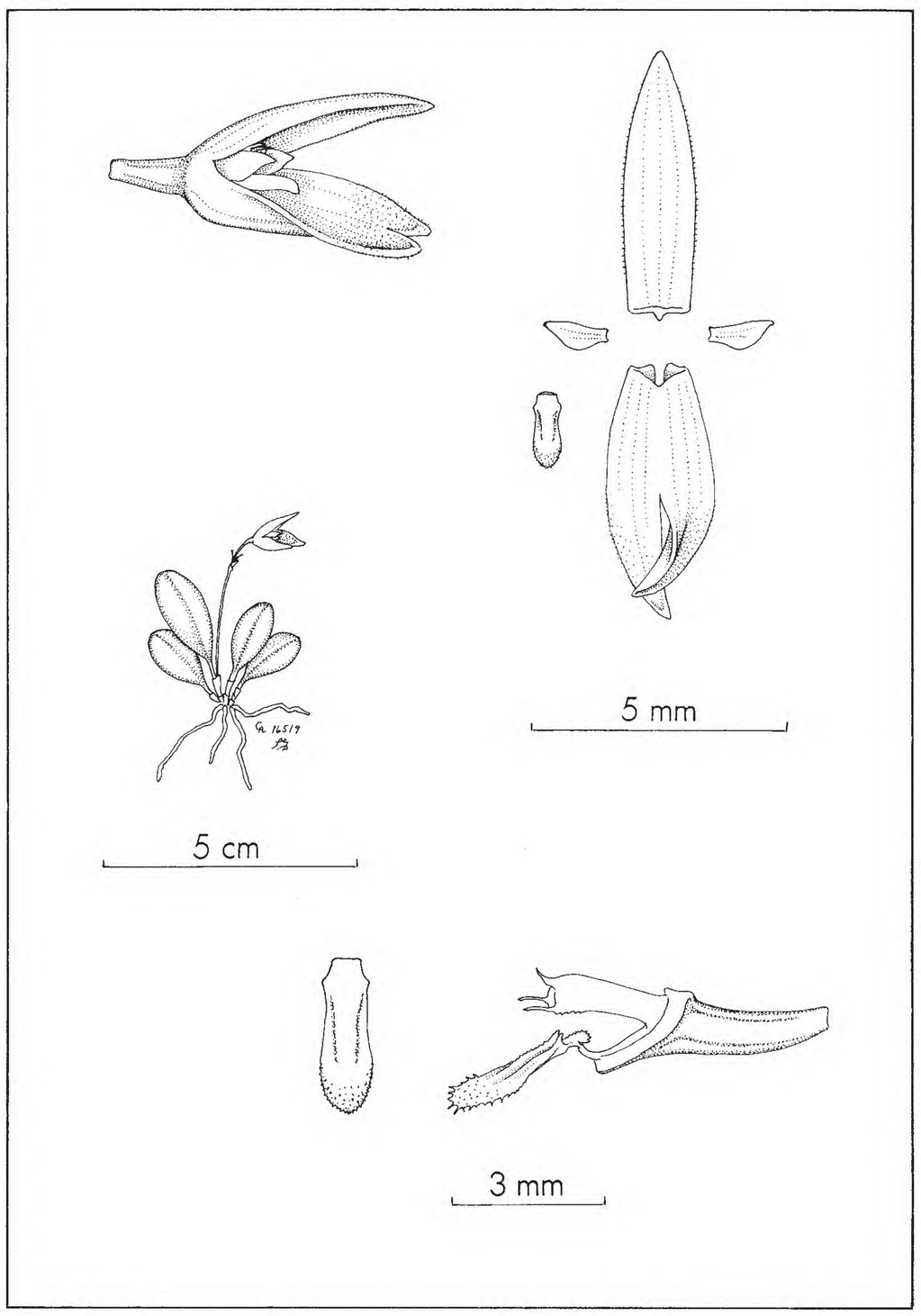


Fig. 163. Sarcinula chontalensis

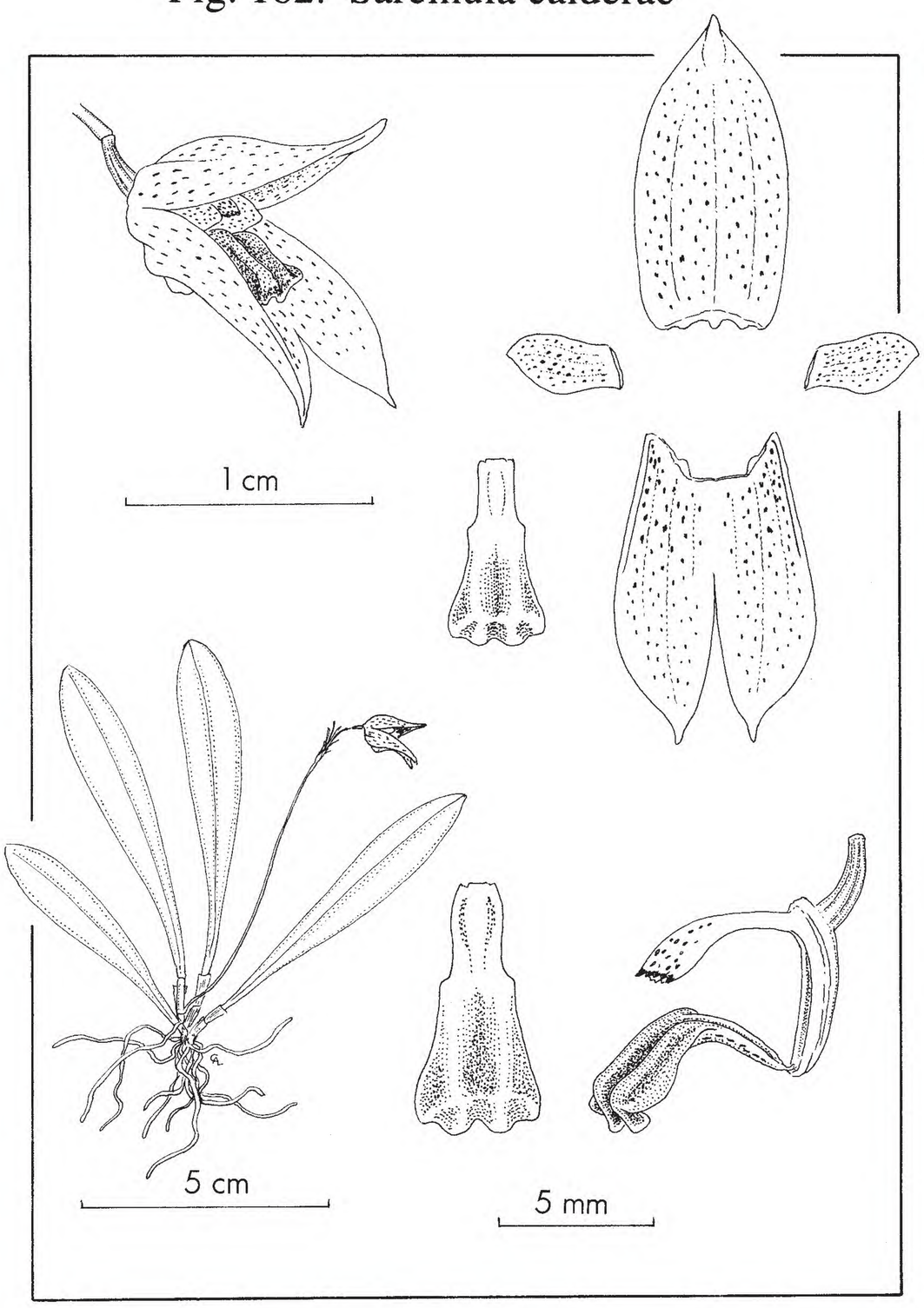


Fig. 164. Sarcinula condylata

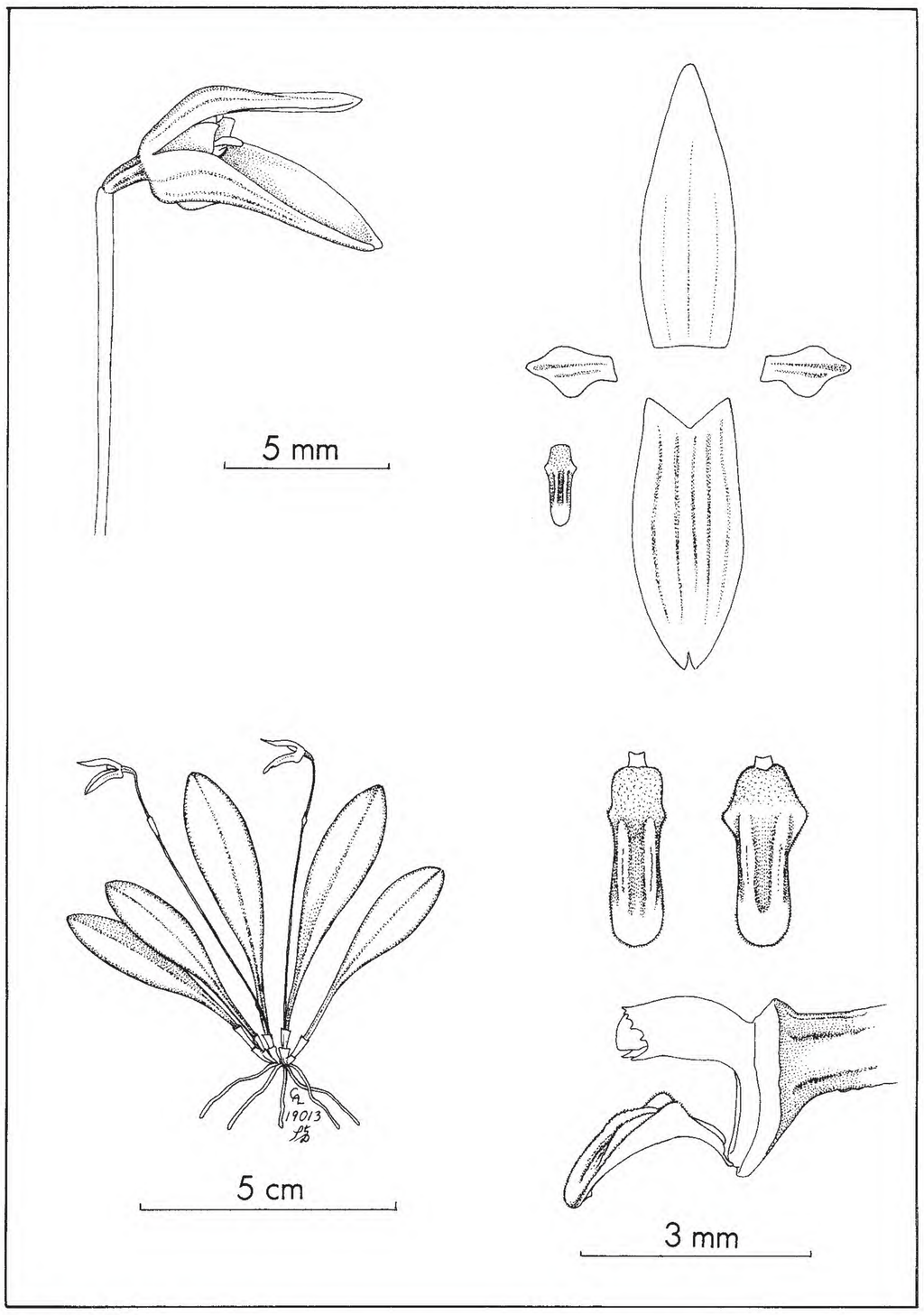


Fig. 165. Sarcinula corniculata

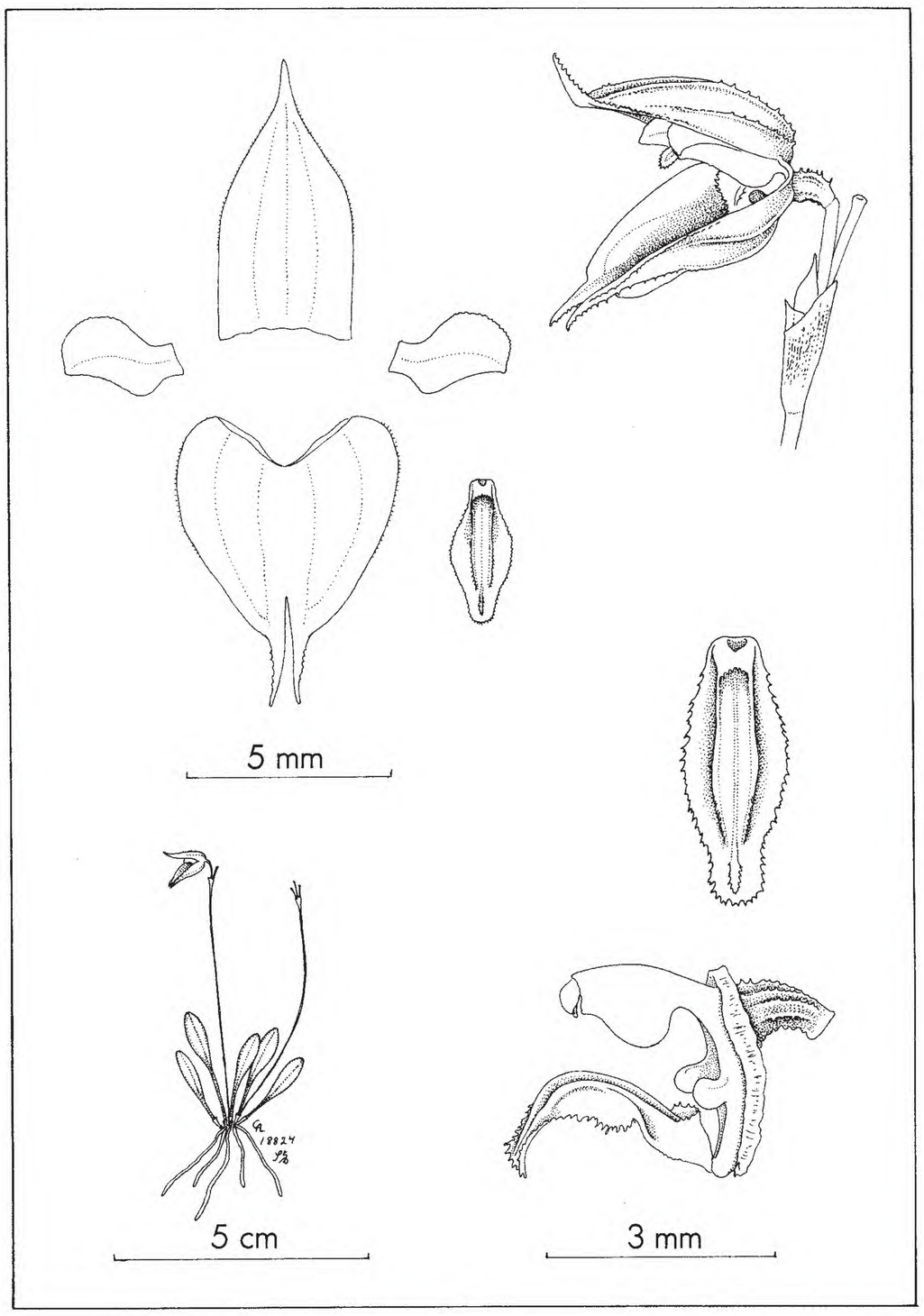


Fig. 166. Sarcinula coronula

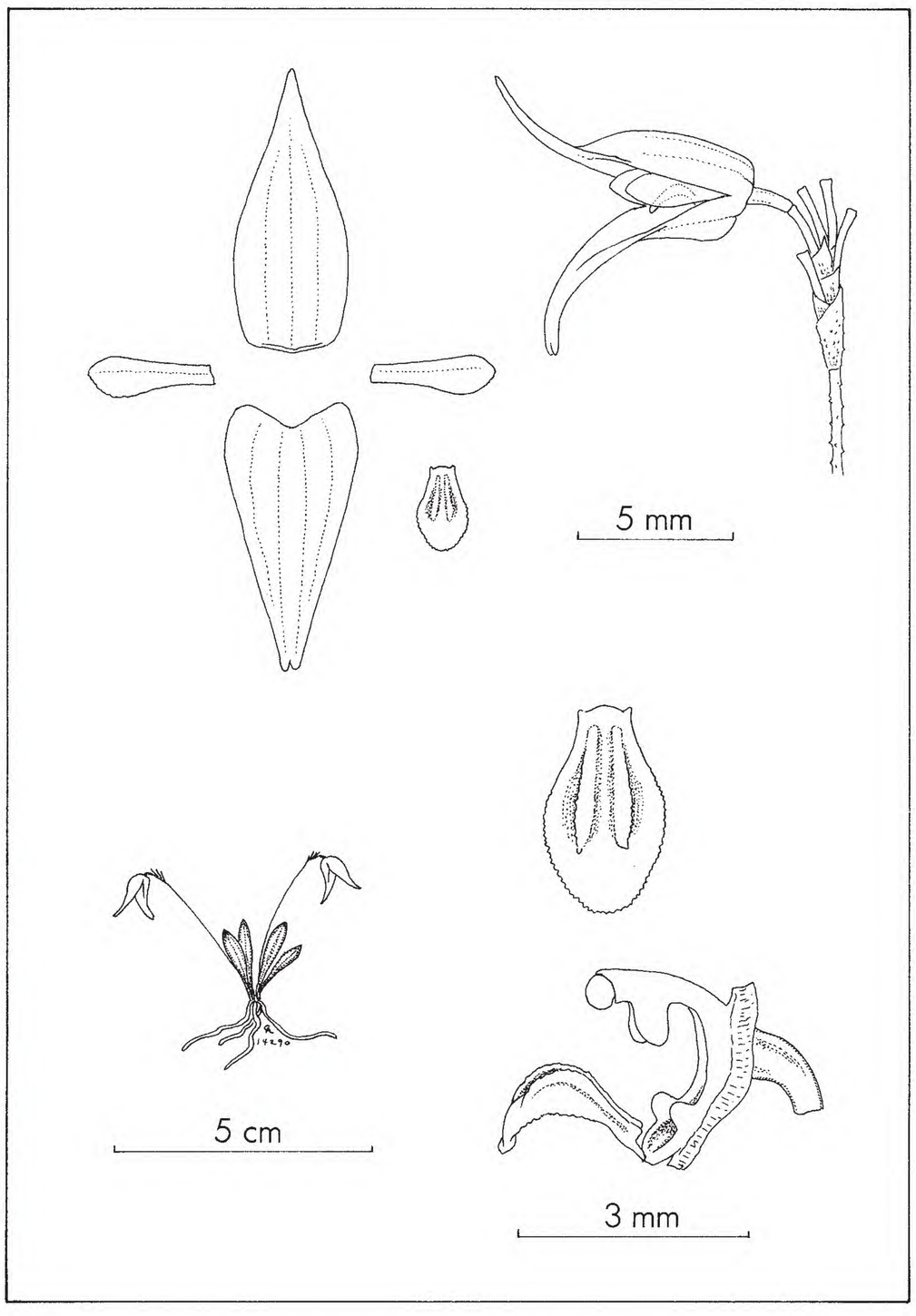


Fig. 167. Sarcinula cycesis

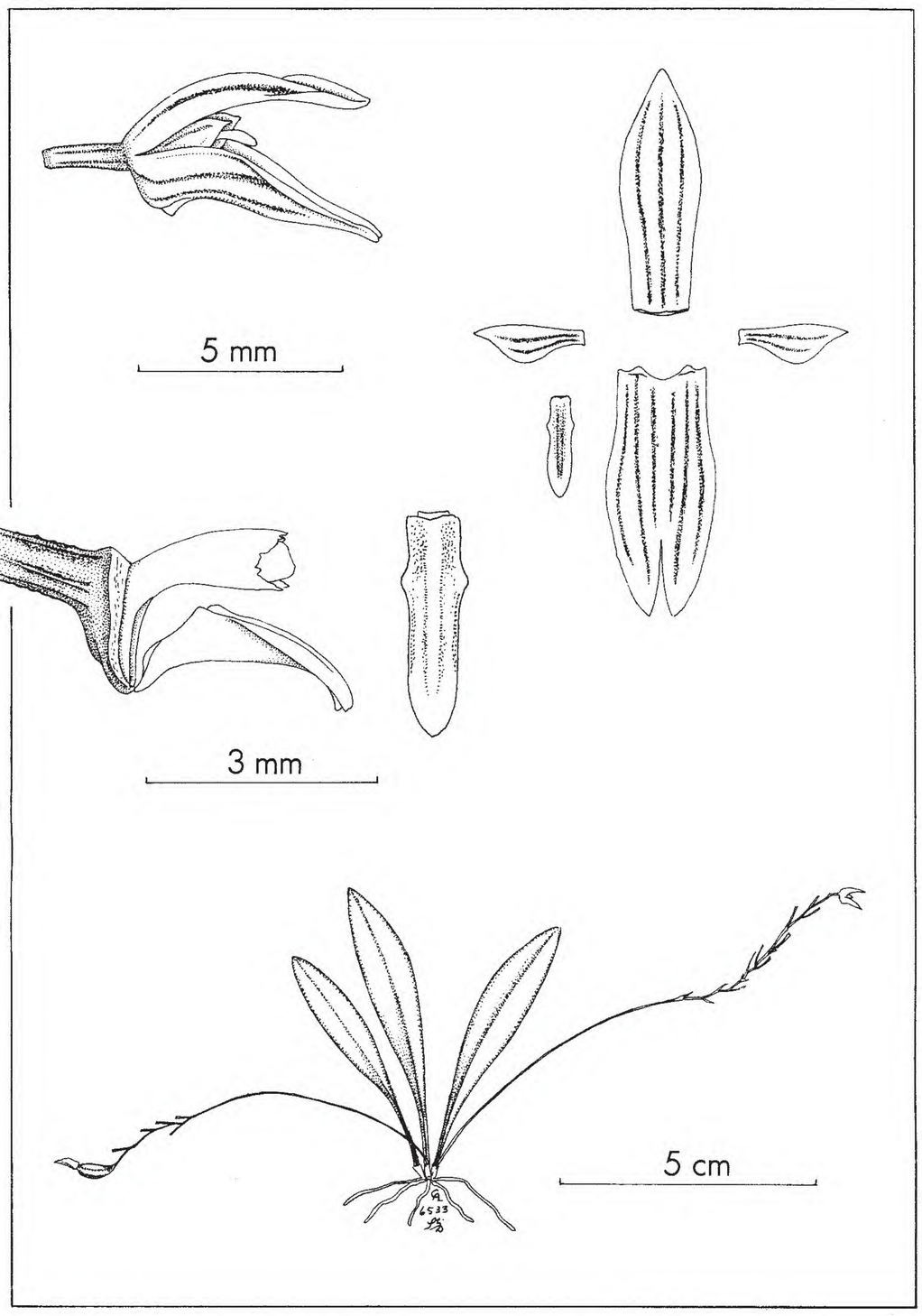


Fig. 168. Sarcinula displosa

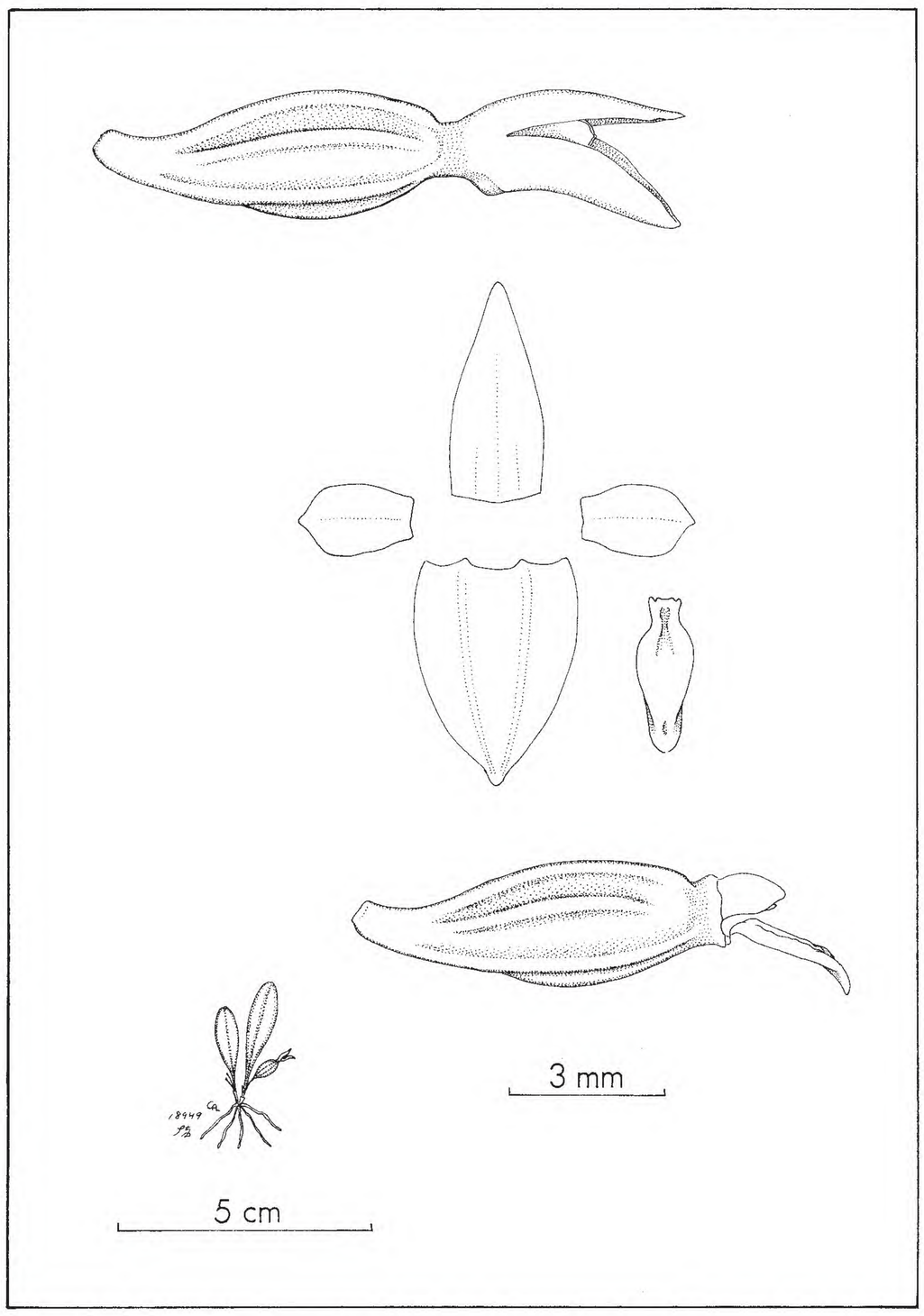


Fig. 169. Sarcinula exilis

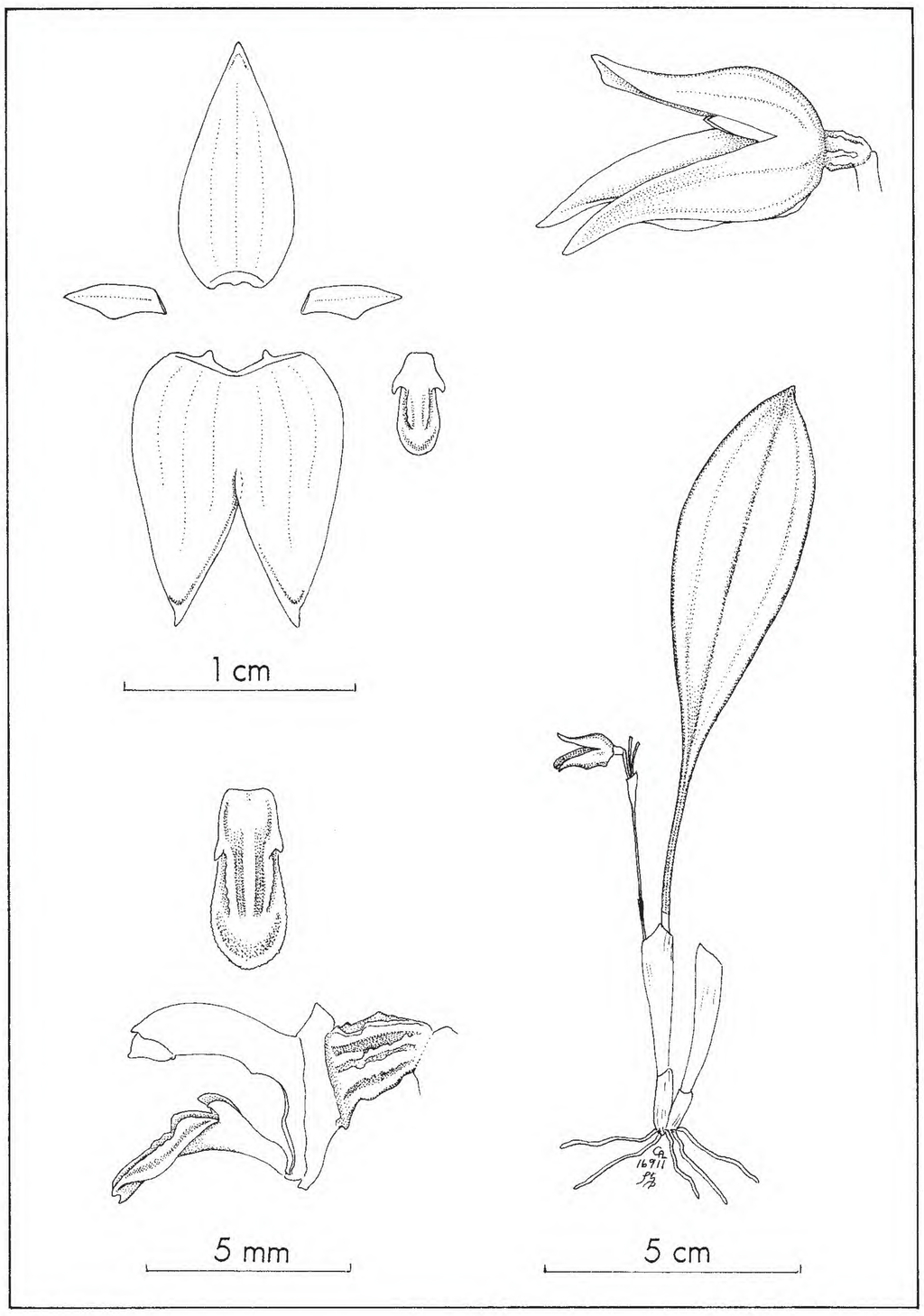


Fig. 170. Sarcinula fulgens

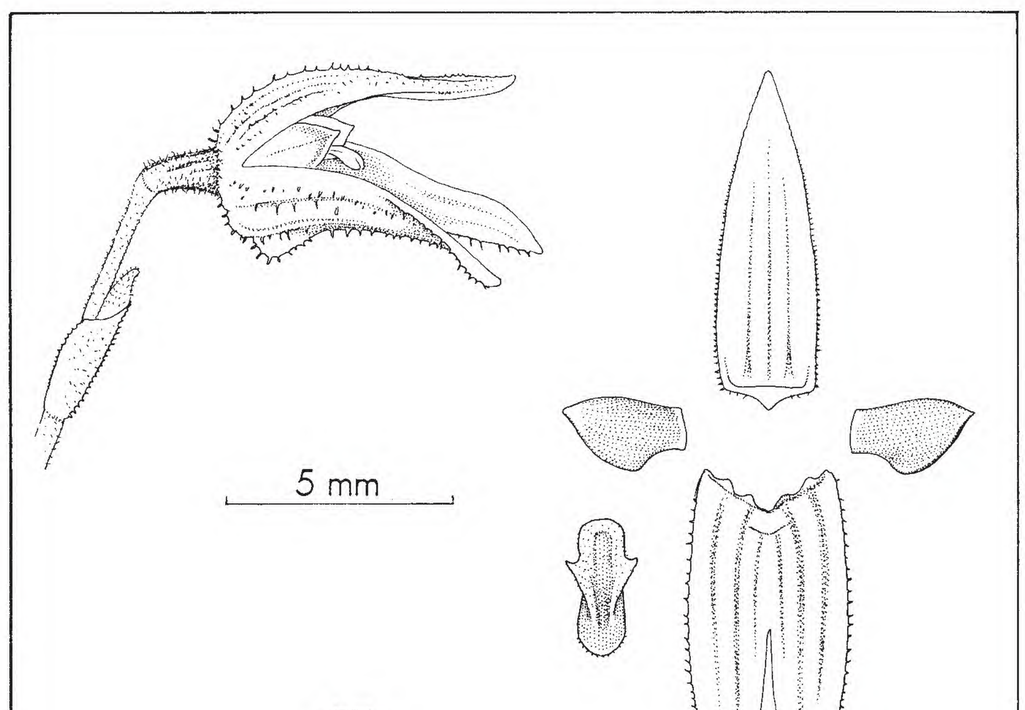


Fig. 171. Sarcinula glandulosa

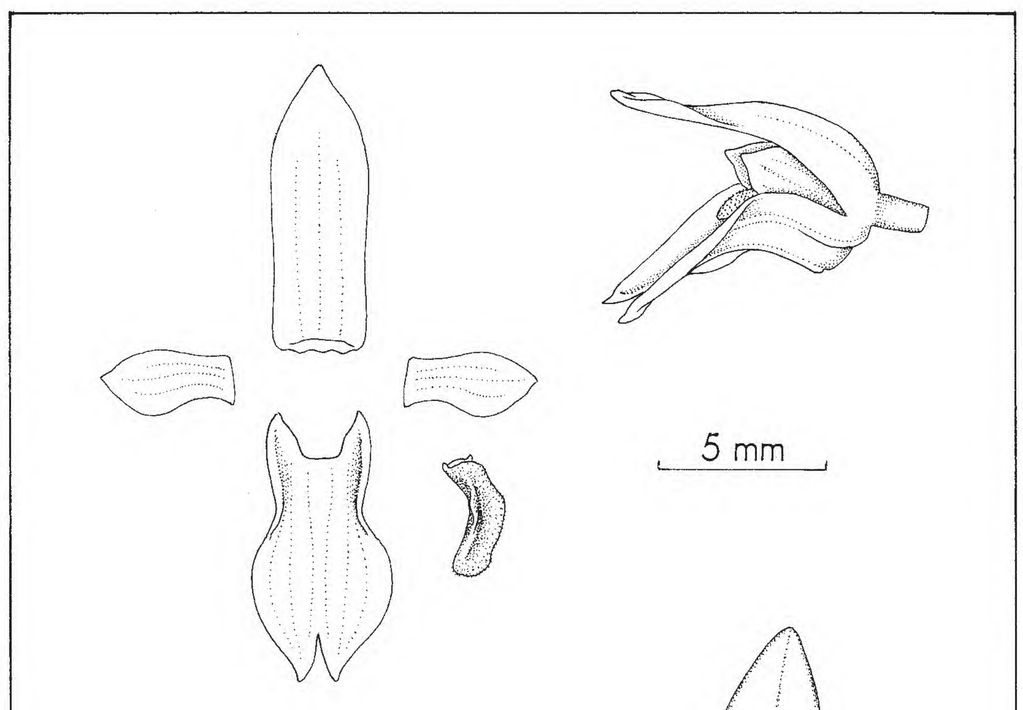


Fig. 172. Sarcinula gunacastensis

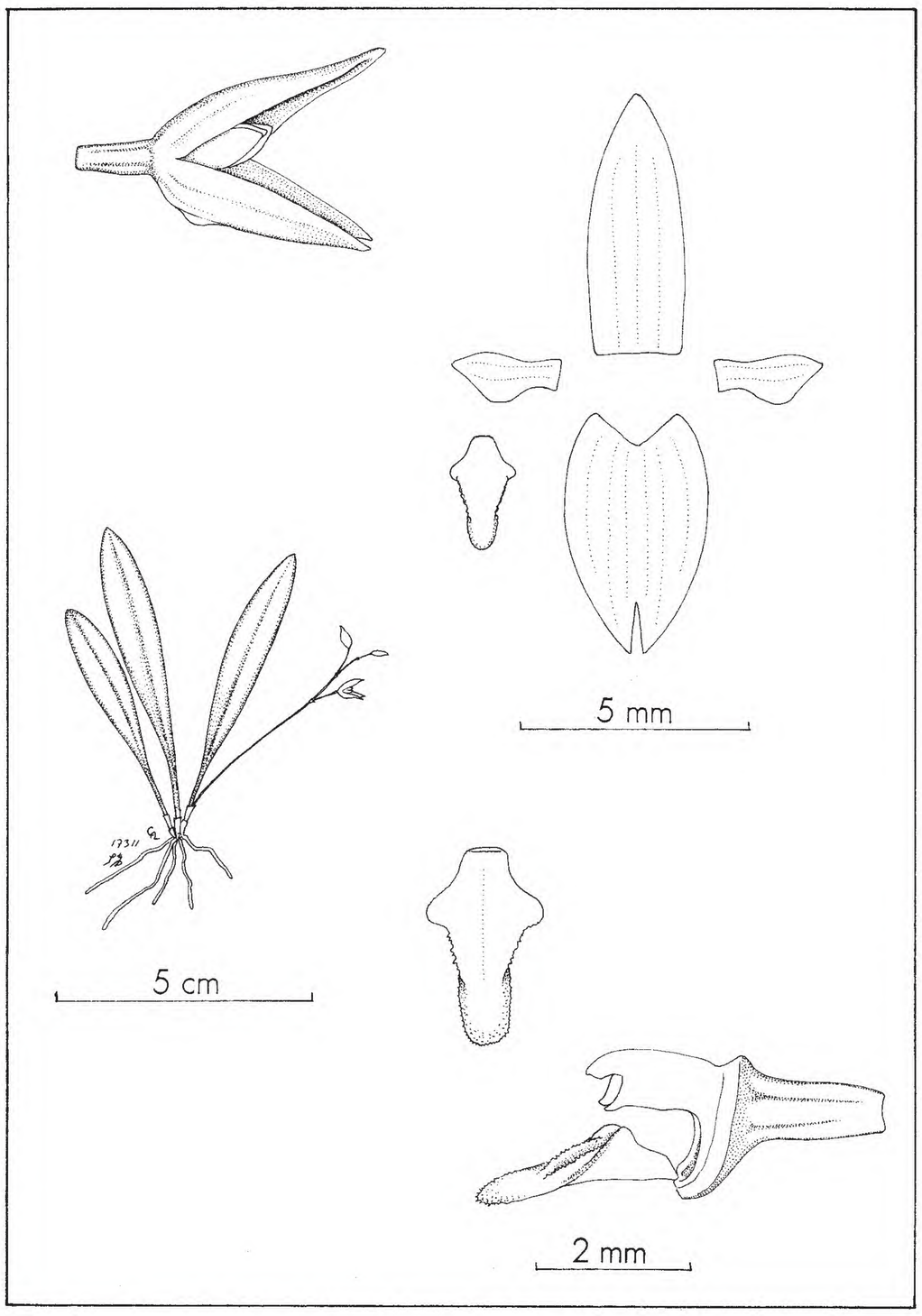


Fig. 173. Sarcinula leptantha

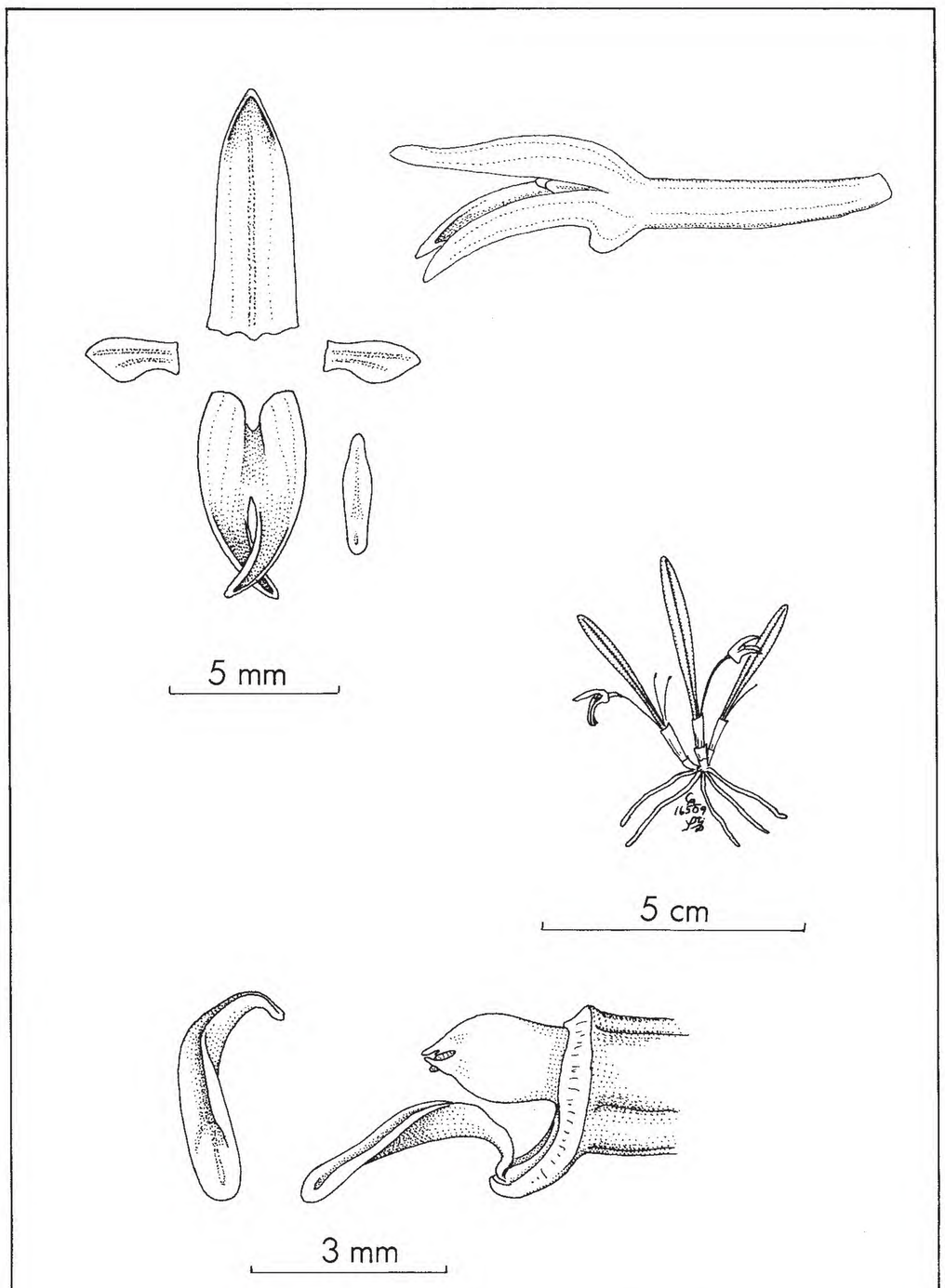


Fig. 174. Sarcinula psichion

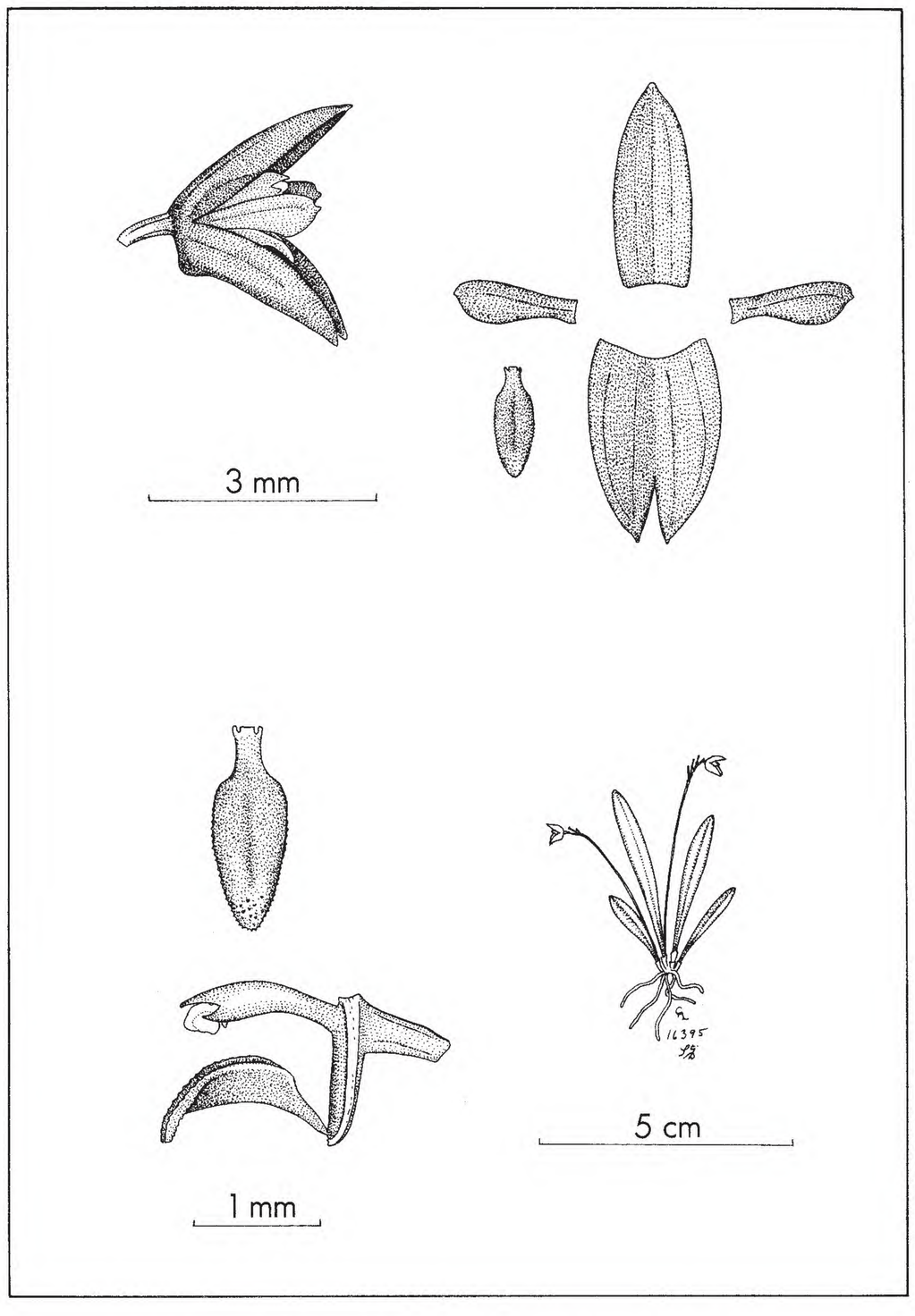


Fig. 175. Sarcinula purpurella

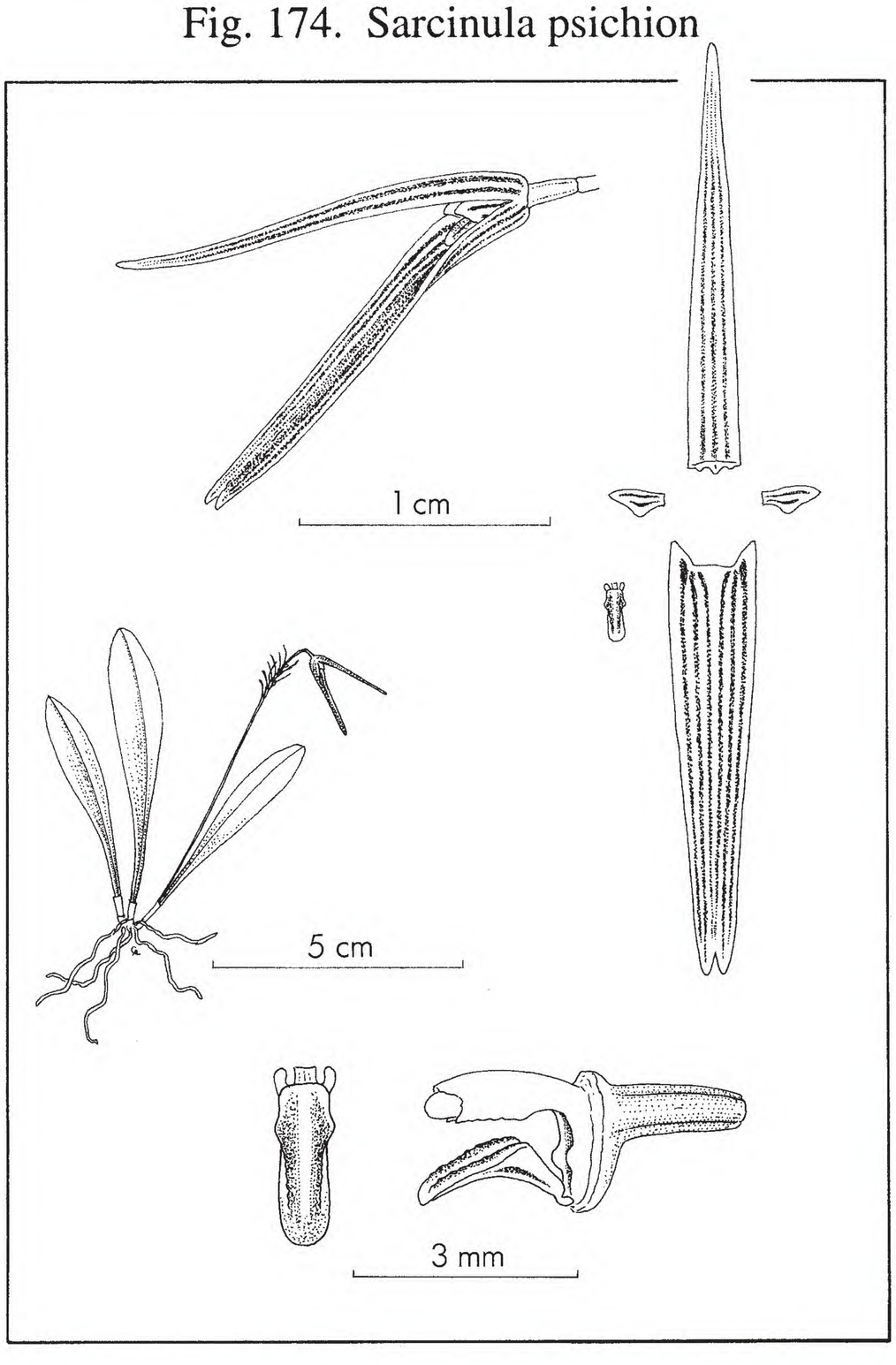


Fig. 176. Sarcinula scolopax

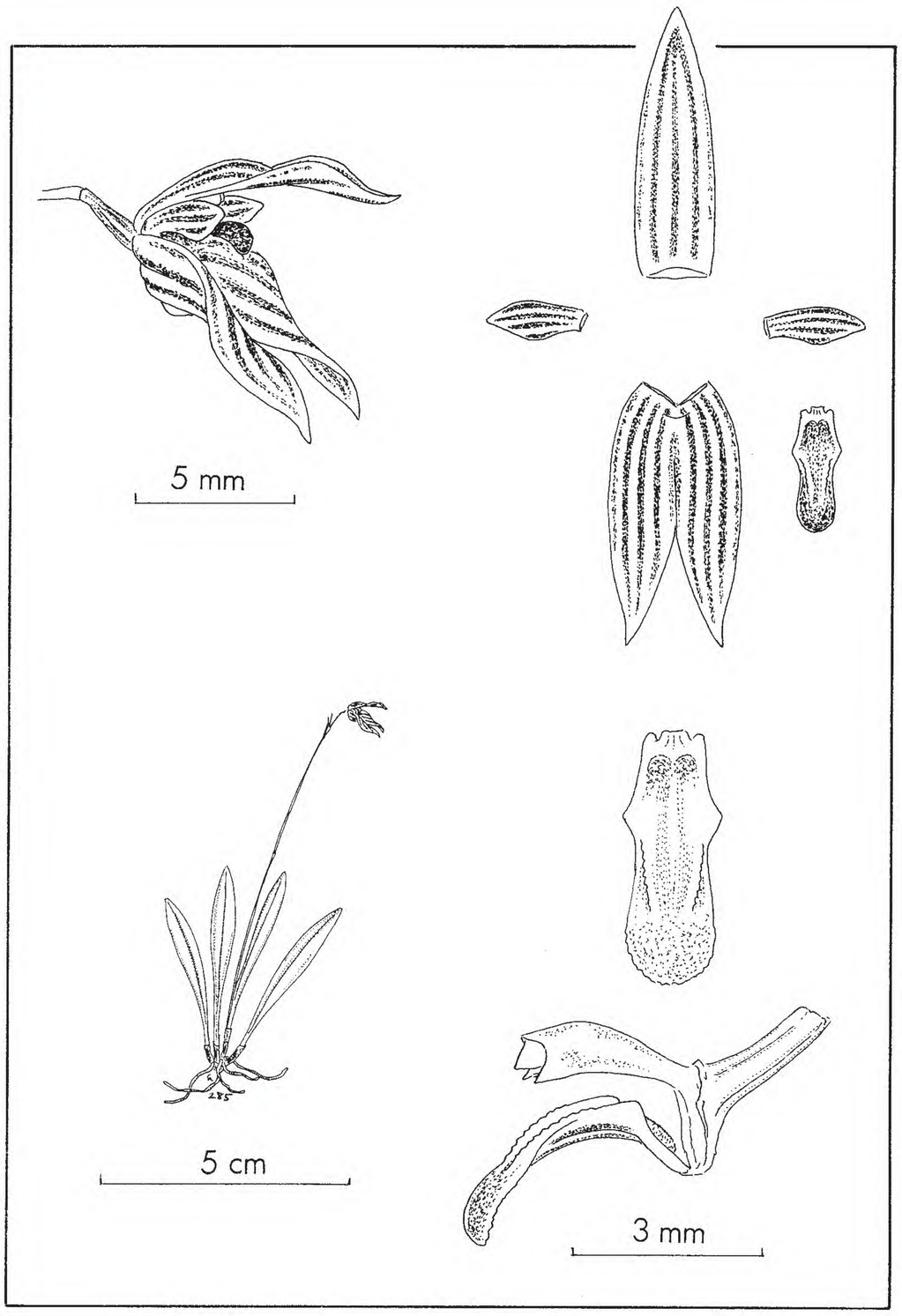


Fig. 177. Sarcinula simmleriana

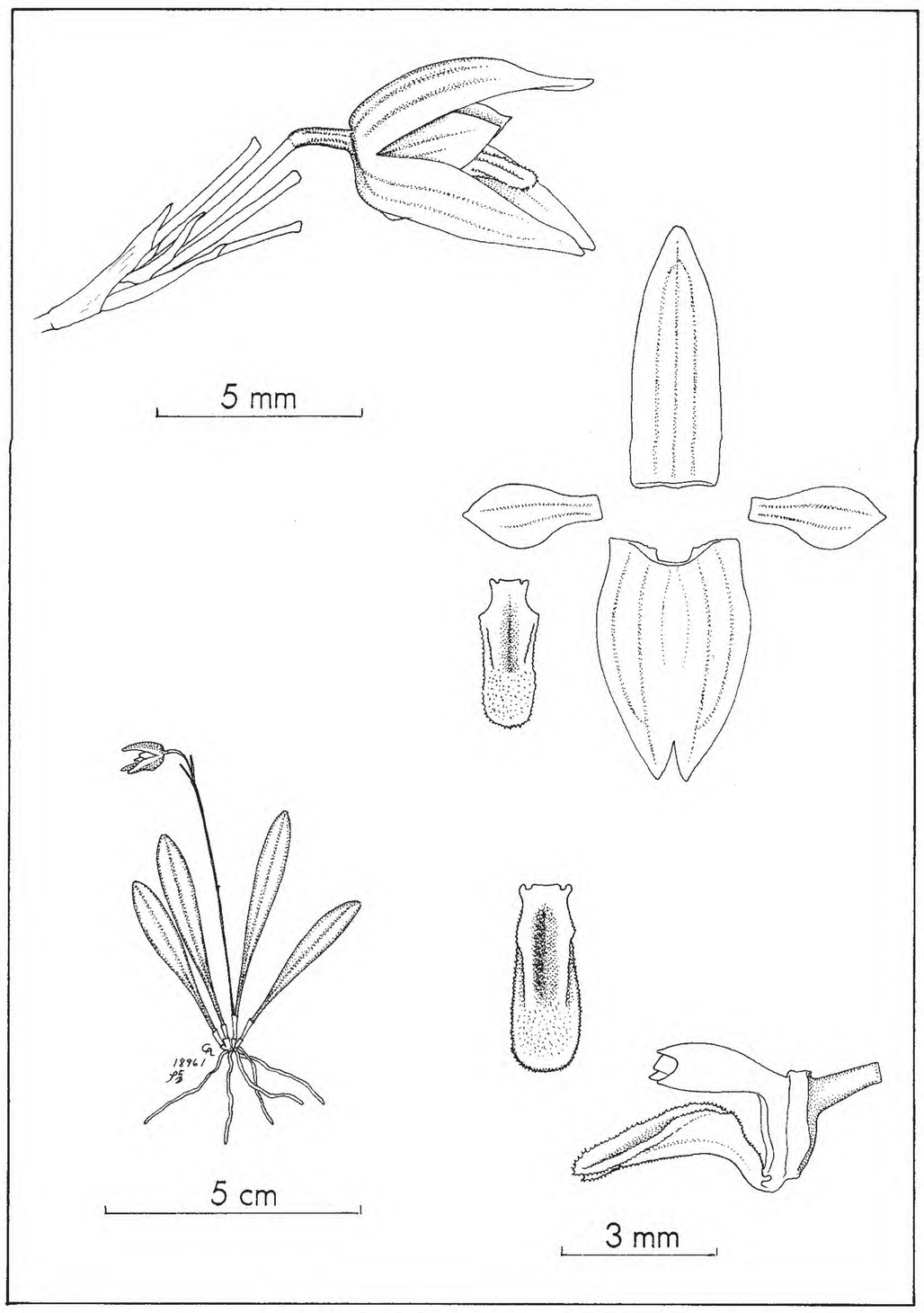


Fig. 178. Sarcinula striata

SYLPHIA

Sylphia Luer, gen. nov.

Ety.: From the new Latin *sylphes*, "graceful nymphs," referring to a mystical relationship.
Type: *Pleurothallis turrialbae* Luer, Lindleyana 6: 105, 1991.

Ovarium papillosum vel spiculatum. Sepala longicaudata. Petala labellumque integra.

This genus of four tiny, tufted species is characterized by long-attenuate, caudate sepals with the laterals free from below the middle; entire petals and lip; and more or less papillose or spiculate ovaries. However, in one species, *Sylphia cabellensis*, the ovary is smooth.

Species attributed to *Sylphia*

Sylphia cabellensis (Rchb.f.) Luer .....Fig. 179.
Sylphia cactantha (Luer) Luer .....Fig. 180.
Sylphia fuegii (Rchb.f.) Luer.....Fig. 181a,181b.
Sylphia turrialbae (Luer) Luer. .....Fig. 182.

Sylphia cabellensis (Rchb.f.) Luer, comb. nov.

Bas.: *Pleurothallis cabellensis* Rchb.f., Linnaea 22: 832, 1849.
Ety.: Named for Mt. Cabello where the species was collected.

Syn.: *Humboldtia cabellensis* (Rchb.f.) Kuntze, Gen. Sp. Pl. 2: 667, 1891.

Syn.: *Pleurothallis fritzii* Carnevali & G.A.Romero, Orchids Venez. ed. 2, 1142, 2000.
Ety.: Named for William Fritz who cultivated this species.

Syn.: *Specklinia cabellensis* (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 256, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 7-19 mm long, enclosed by 2 thin, ribbed, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, subacute to obtuse, 10-18 mm long including a petiole 3-5 mm long, 4-5 mm wide, narrowly cuneate below into the petiole. **Inflorescence** a lax, flexuous, successively many-flowered raceme, 5-11 cm long, including the slender peduncle 1.5-2 cm long, emerging laterally from the ramicaul; floral bracts 2 mm long; pedicels 5-9 mm long; ovary winged, 1.75 mm long; **sepals** yellow-green, mottled and suffused with purple, glabrous, subcarinate, the dorsal sepal oblong, 5 mm long, 2 mm wide, 3-veined, the apex subacute, contracted into a yellow tail 5 mm long, the lateral sepals ovate, oblique, 4 mm long, connate 1.5 mm, 3.5 mm wide together, the apices subacute, contracted into tails 5-6 mm long; **petals** yellow, spotted with red, cuneate-obovate, subacute to obtuse, 2.5 mm long, 1.25 mm wide; **lip** suffused with purple, oblong, 2.75-3 mm long, 1.25 mm wide, the apex rounded, verrucose, the disc concave between erect, broadly rounded sides below the middle, the base hinged to the column-foot; **column** semiterete with narrow, marginal wings, toothed at the apex, 2.25 mm long, the foot 1 mm long, with the anther and the stigma ventral.

VENEZUELA: **Carabobo**: Mt, Cabello, alt. 4,500 ft., May 1846, *Funk & L. Schlim 578* (Holotype: W); **Dist. Fed.:** between Colonia Tovar-Junquito road and Hda. El Limón, alt. 1300-1500 m, 12 Oct. 1965, *J.A. Steyermark 94395* (AMES, VEN). **Aragua**: Parqué Nacional Henri Pittier, Rancho Grande, alt. 1300 m, 18 July 1993, *G. Carnevali et al. 3260* (holotype of *P. fritzii*: VEN; isotypes: AMES, CICY, MO). Sine loc., cultivated by B. Würstle in Spielberg, Germany, 10 Sept. 1981, *C. Luer 6485* (SEL). COLOMBIA: "New Grenada," 1852, alt. 5,000-6,000 ft., *L. Schlim 1021* (W).

This species is infrequent in western Venezuela and eastern Colombia. It is characterized by the small, caespitose habit and a long, loose, flexuous, successively flowered raceme with long pedicels. The tails of the purple-suffused sepals are often shorter than the blades as in the illustration by Dunsterville in *Venezuelan Orchids Illustrated*, about as long as the blades as illustrated here, or longer than the blades, as in the collection described as *Pleurothallis fritzii* Carnevali & G.A. Romero. The petals are cuneate and obtuse. The oblong lip is concave below the middle between erect, rounded margins, and the apex is verrucose and rounded.

Sylphia cactantha (Luer) Luer, comb. nov.

Bas.: *Pleurothallis cactantha* Luer, Selbyana 3: 72, 1976.
Ety.: From the Greek *cactantha*, "cactus-flower," referring to the spiculate sepals.

Syn.: *Specklinia cactantha* (Luer) Pridgeon & M.W.Chase, Lindleyana 16: 257, 2001.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 2-4 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** dark green to blue-green, erect, coriaceous, elliptical, subacute to obtuse, marginate, 7-11 mm long including an indistinct petiole ca. 1 mm long, 2-4 mm wide, cuneate below into the subpetiolate base. **Inflorescence** a congested, few-flowered fascicle of single, successive flowers, borne by a slender, suberect, sparsely spiculate peduncle, 13-20 mm long; pedicels sparsely muricate, 2-3 mm long; floral bracts thin, tubular, imbricating, 1.5-2 mm long; ovary echinate, 0.5-0.75 mm long; **sepals** membranous, translucent white, more or less suffused with rose, carinate-spiculate externally, glabrous within, the dorsal sepal ovate, acute, long-acuminate, 10-11 mm long, 1.75-3 mm wide, 3-veined, the lateral sepals narrowly ovate, oblique, connate to near the middle, acute, long-acuminate, 10-11 mm long, 3-3.5 mm wide together; **petals** translucent pale green, suffused with rose centrally, cuneiform, glabrous, 2-2.5 mm long, 1-1.5 mm wide, the apex obtuse, truncate-retuse, sometimes with a minute apiculum in the sinus; **lip** red, fleshy, oblong-ovate, 2.5-3.5 mm long, 1-1.75 mm wide, the apex rounded, microscopically erose, with the margins erect below the middle, the disc shallowly sulcate between a pair of low, smooth carinae along the middle third, the base truncate, hinged to the column-foot; **column** pale green, semiterete, 1.5-2 mm long, longitudinally winged above the middle, the foot 1.5 mm long, with a pair of minute calli in the Colombian collection, the anther and stigma ventral.

PANAMA: **Panama**: along the Altos de Pacora road, alt. 650 m, 4 Mar. 1976, *C. Luer, J. Juer, P. Taylor & R.L. Dressler 743* (Holotype: SEL); Cerro Jefe, alt. 1000 m, 19 Aug. 1967, *R.L. Dressler 3027* (SEL); La Eneida, Cerro Jefe, alt. 1000 m, 9 June 1971, *R.L. Dressler 4029* (SEL). **Coclé**: El Valle, collected by A. Maduro, cultivated at Finca Dracula, 18 Nov. 1998, *C. Luer 18993* (MO).
COLOMBIA: **Risaralda**: Pueblo Rico, along new road to TV antenna south of Pueblo Rico, alt. 1630 m, 14 May 1993, *C. Luer, J. Luer, R. Escobar & A. DeWilde 16845* (MO).

This little species is found in Eastern Panama and the Western Cordillera of Colombia. It is characterized by the tiny tuft of elliptical leaves, and a sparsely spiculate peduncle that bears a successively flowered, congested inflorescence beyond the leaves. The ovary is spiculate-verrucose; the sepals are spiculate and long-acuminate; and the petals and the lip are entire. A microscopic pair of calli are present on the column-foot of the Colombian collection.

Sylphia fuegii (Rchb.f.) Luer, comb. nov.

Bas.: *Pleurothallis fuegii* Rchb.f., Beitr. Orch. Centr. Amer. 97, 1866.
Ety.: Named for Volcán Fuego where the species are first collected.

Syn.: *Pleurothallis fuegii* var. *echinata* L.O.Williams, Ann. Missouri Bot. Gard. 33: 120, 1946.
Ety.: From the Latin *echinatus*, "spiny like a hedgehog," alluding to the ovary.

Syn.: *Pleurothallis hagsateri* Luer, Orquidea, Mex., 6: 168, 1977.
Ety.: Named for Eric Hágsater, indefatigable investigtor of *Epidendrum*, who collected this species.
Syn.: *Anathallis fuegii* (Rchb.f.) Pridgeon & M.W.Chase, Lindleyana 16: 248, 2001.
Syn.: *Specklinia echinata* (L.O.Williams) Solano & Soto Arenas, Icon. Orch. (Mex.) 5-6, 2003.
Syn.: *Specklinia fuegii* (Rchb.f.) Solano & Soto Arena, Icon. Orchid. (Mex.) 5-6: x-xi, 2003.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, 3-8 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, narrowly obovate, petiolate, subacute to obtuse, 8-25 mm long including an ill-defined petiole 3-10 mm long, 4-7 mm wide, gradually narrowed below into the base. **Inflorescence** an erect, more or less arching, loose, secund to distichous, successively flowered raceme, up to 7 cm long including the peduncle 3-4 cm long, laterally from the ramicaul; floral bracts oblique, acute, 1-1.5 mm long; pedicels 1-2 mm long; ovary 1 mm long, with the carinae variably smooth to irregular or verrucose; **sepals** membranous, subcarinate, glabrous, pale greenish white, the dorsal sepal oblong-ovate, 4.5-8 mm long, 1.75-5 mm wide, 3-veined, with the apex subacute, contracted into a tail 1.5-3 mm long, the lateral sepals connate to near the middle into an ovate, bifid lamina synsepal, 5-7.5 mm long, 1.75-3 mm wide, 4-veined, with the apices acute, contracted to tails similar to that of the dorsal sepal; **petals** translucent yellow-white, lightly suffused with rose, obovate, obtuse to rounded at the apex, 1.5-2 mm long, 0.6-1.5 mm wide, 1-veined; **lip** yellow-green, more or less suffused with red, oblong-subtrilobed, rounded at the apex, 2-2.5 mm long, 0.75-1 mm wide, the sides erect and broadly rounded, more or less contracted into a broad, truncate base, the disc shallowly concave between marginal calli on the middle third, the base hinged to the column-foot; **column** broadly winged above the middle, dentate at the apex, 0.5-1.75 mm long, the foot equally long, the anther and stigma ventral.

GUATEMALA: **Sacatepéquez**: Volcán de Fuego, 20 Jan 1857, *H. Wendland 294* (Holotype: W); **Cobán**: Chicayo near Cobán, alt. 4,400 ft., Dec. 1877, *H. von Türckheim s.n.* (W); near Petet, alt. 4600 ft., Nov. 1877, *H. von Türckheim s.n.* (AMES, W); San Marcos: above Barranco Eminencia, alt. ca. 2700 m, 14 Mar. 1939, *P.C. Standley 68521* (K); sine loc., collected and cultivated in Guatemala, 17 Feb. 1981, *M. Dix, s.n.* (SEL), C. Luer illustr. 5840.
MEXICO: **Veracruz**: sine loc., received from Eric Hágsater 2 June 1976, flowered in cultivation at SEL, 19 Nov. 1976, *C. Luer 048* (holotype of *P. hagsateri*: SEL).
HONDURAS: **Comayagua**: near summit above El Achote, above plains of Siguatepec, alt. 1800 m, 21 July 1936, *T.G. Yuncker et al. 6032* (K, MO). **La Paz**: Montaña Verde, Cordillera Güajiquiro, alt. 1900 m, 23 Mar. 1969, *A.R. Molina 24397* (MO). **Gracias a Dios**; Tuas, Brus Laguna, 17-27 Apr. 1971, *C. Nelson & M. Hernández 1006* (TEFH, MO). **Ocotepeque**: Belén Gualch, road to Cucuyagua, alt. 1870 m, 24 June 1994, *G. Dividse et al. 35359* (MO).
SAN SALVADOR: between Perquin and Sabanetas, alt. 1900-2000 m, *F. Hamer 163*; Cayacuanca near Ignacio, alt. 1820 m, 21 Sept. 1962, *S. Winkler 024* (MO).
NICARAGUA: **Zeylaya**: Caño Costa Riquita, alt. 130-180 m, *D. Stevens 5063* (MO). **Jinotega**: Sta. María de Ostumas, alt. 1230 m, *A.H. Heller 3191* (illustr. at SEL); Montaña La Galia, alt. 1350 m, *A.H. Heller 10583* (illustr. at SEL).
PANAMA: **Chiriquí**: Volcán, alt. 9,000 ft., 15 July 1938, *M.E. Davidson 981* (holotype of var. *echinata*: AMES). **Coclé**: El Valle del Antón, alt. ca. 1000 m, collected by C. Luer & H. Butcher, flowered in cultivation by H.H. Morgan in Sarasota, FL, 28 Mar. 1978, *C. Luer 2912* (SEL).

This little species is variable in its wide distribution through Central America. The crude figure of the type published by Reichenbach is erroneous with ramicauls as long as the leaves, and proportionately exceedingly small flowers. *Sylphia fuegii* (Rchb.f.) Luer is characterized by small leaves borne in a tuft by abbreviated ramicauls. The loose, successively flowered raceme of pale, greenish flowers far surpasses the leaves. The apices of the sepals are contracted into short, slender, but sometimes thickened tails; the petals are small and obtuse; and the margins of the lip are erect and rounded above the lower third above a broad claw. The ovary is costate with the carinae varying from smooth, slightly irregular, coarsely irregular, to distinctly verrucose. It was described as a variety by L.O. Williams. A collection from Mexico by Hágsater, described as *Pleurothallis hagsateri* Luer, differs from the usual *Sylphia fuegii* by smaller flowers with shorter, thick sepaline tails.

Sylphia turrialbae (Luer) Luer, comb. nov.

Bas.: *Pleurothallis turrialbae* Luer, Lindleyana 6: 105, 1991.
Ety.: Named for Volcán Turrialba where this species was discovered.

Syn.: *Specklinia turrialbae* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 264, 2004.

Plant very small, epiphytic, caespitose; roots slender but comparatively thick. Ramicauls erect, slender, 2-3 mm long, enclosed by 2 thin, tubular sheaths. **Leaf** erect, coriaceous, obovate, obtuse, petiolate, 10-14 mm long, 3.5-4.5 mm wide, cuneate below into a slender petiole 3-5 mm long. **Inflorescence** a single flower borne by a slender, erect peduncle 8-12 mm long, emerging laterally from the ramicaul; floral bract 1 mm long; pedicel 0.75 mm long with a filament 0.75 mm long; ovary echinate, 0.5 mm long; **sepals** translucent yellow, glabrous, with the dorsal sepal elliptical, concave, 4.5 mm long, 2.5 mm wide, 3-veined, the apex subacute, contracted into a filiform tail 6 mm long, with the lateral sepals connate 3 mm into an oblong lamina ca. 5 mm long, 3 mm wide, with the apices acute, acuminate into filiform tails ca. 5 mm long; **petals** translucent yellow, obovate with the labellar margin dilated, 2 mm long, 0.8 mm wide, with the apex obtuse, microscopically erose; **lip** purple, thick, arcuate, elliptical, 3 mm long, 1.5 mm wide, with the apex rounded, shallowly sulcate centrally between low calli within the margins above the middle, with the rounded base hinged to the column-foot; **column** longitudinally winged in the distal three fourths, 1 mm long, with the apex minutely denticulate, the foot 1.5 mm long, with the anther dorsal and the stigma apical.

COSTA RICA: **Cartago**: epiphytic in cloud forest on Volcán Turrialba, alt. 2000 m, 17 Mar, 1986, *C. Luer, J. Luer, D. Retana & D. Dod 12093* (Holotype: MO). **San José**: Parqué Nac. Braulio Carrillo, Vásquez de Coronado, Sta. Zurquí, alt. 1680-1750 m, 29 Oct. 1990, *S. Ingram & K. Ferrell-Ingram 652* (AMES, CR, F, K, MO, SEL).

This tiny, caespitose species is rare and endemic in Costa Rica. It is distinguished by narrowly elliptical leaves less than two centimeters long borne by rami-

cauls less than five millimeters long. The peduncle is single-flowered, and about as long as the leaf. The ovary is densely long-papillose, with papillae extending forward onto the sepals. The concave dorsal sepal is as broad as the lateral sepals combined, and all three sepals are long-caudate. The petals are obliquely obtuse and single-veined. The lip is elliptical and shallowly channeled centrally between low, intramarginal calli.

TRIBULAGO

Tribulago Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 265, 2004.

Type: *Epidendrum tribuloides* Sw., Prodr. 123, 1788.

Ety.: From the Latin *tribulosus*, "thorny," and the suffix "-ago," indicating resemblance, referring to the ovary and capsule.

Syn.: *Pleurothallis* subgen. *Specklinia* sect. *Tribuloides*Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 91, 1986.

This genus with two species is distinguished by abbreviated ramicauls and peduncles; fleshy, brick red, verrucose sepals; a short, broad, papillose or verrucose ovary; and a longitudinally winged column with a ventral anther.

Tribulago blancoi (Pupulin) Luer, comb. nov.

Bas.: *Pleurothallis blancoi* Pupulin, Caesiana 15: 1, 2000.

Ety.: Named for Mario Blanco, collector of the species.

Syn.: *Specklinia blancoi* (Pupulin) Soto Arenas & Solano, Ic. Orch. (Mex.) 5-6, t. 669, 2003.

Plant small, epiphytic, caespitose, roots slender. Ramicauls stout, erect, 7-10 mm long, enclosed by 2-3 loose, imbricating sheaths. **Leaf** erect to suberect, fleshy-coriaceous, narrowly linear-elliptical, narrowly obtuse, 5-8 cm long including the petiole, 0.6-0.8 cm wide, gradually narrowed below into the slender petiole 1.5-2 cm long. **Inflorescence** a single flower, peduncles ca. 1 mm long, borne laterally from the ramicaul; floral bracts thin, infundibular, 8 mm long; pedicels 6 mm long, verrucose toward the ovary; ovary densely papillose, 0.8-1 mm long, 1.5-2 mm wide; **sepals** fleshy, orange-brick red, rigid, subverrucose externally, papillose-verrucose within above the middle, the dorsal sepal oblong-pandurate, obtuse, 5-8 mm long, 1.8-3 mm wide, 3-veined, the lateral sepals connate into an oblong-pandurate lamina, 4.5-6 mm long, shortly bifid at the rounded apex, 3.5-4.2 mm wide, 6 veined; **petals** fleshy along the center externally, obovate, slightly oblique, obtuse, 2.8-3.25 mm long, 1.1-1.8 mm wide, 2-veined; **lip** fleshy, oblong, with the margins slightly dilated near the middle, cellular-papillose, 2.7-3 mm long, 0.8-1.2 mm wide, the apex rounded, decurved, the disc shallowly channeled with transverse, cellular lamellae, the base subtruncate, hinged to the tip of the column-foot; **column** semiterete, longitudinally winged, bidentate at the apex, 2.2-2.8 mm long, the anther, rostellum and stigma ventral, the foot 1-1.5 mm long.

COSTA RICA: **Puntarenas**: Monteverde, Finca San Cerardo, alt. 1300 m, collected by M. Blanco, 23 Jan. 1999, flowered in cultivation at the Lankester Botanical Garden, 27 June 2000, *F. Pupulin 2434* (Holotype: USJ; Isotype: SEL), C. Luer illustr. 20947.
MEXICO: **Veracruz**: *Purpus 7835* (AMES). **Chiapas**: *Miranda 6349* (MEXU).

Rare and found only in a few distant localities, two in Mexico and one in Costa Rica, this species with little, brick red flowers borne at the base of narrow leaves is similar to the common, widely distributed *Tribulago tribuloides* (Sw.) Luer. Both species are characterized by a cluster of narrow leaves borne by abbreviated ramicauls, and short-pedunculate, brick red flowers. The sepals of *T. blancoi* are remarkably verrucose and obtuse; the petals are obovate and thickened externally; and the lip is oblong with transverse, cellular rugae or lamellae (gill-like). A short, broad, densely papillose ovary is extremely similar to that of *T. tribuloides*.

Illustration: Fig. 183 herein, C. Luer illustr. 20947.

Tribulago tribuloides (Sw.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 265, 2004.

Bas.: *Epidendrum tribuloides* Sw., Prodr. 123, 1788.

Ety.: Named for the genus *Tribulus*, a tree in the Zygophyllaceae, the Caltrop family, referring to the thorny fruit. From the Latin *tribulus*, a 4-pronged implement used to impede cavalry, hence *tribulosus*, "thorny," referring to the prickly fruit.

Syn.: *Dendrobium tribuloides* (Sw.) Sw., Nov. Act. Upsal. 6: 83, 1799.
Syn.: *Cymbidium tribuloides* (Sw.) Spreng., Syst. Veg. 3: 721, 1826.
Syn.: *Pleurothallis tribuloides* (Sw.) Lindl., Gen. Sp. Orch. 6, 1830.

Syn.: *Pleurothallis spathulata* A.Rich. & Galeotti, Ann. Sci. Nat. ser. 3. 3:17, 1845.
Ety.: From the Latin *spathulatus*, "spathulate," referring to the leaves.

Syn.: *Pleurothallis fallax* Rchb.f., Bonplandia 3: 224, 1855.
Ety.: From the Latin *fallax*, "deceptive," in allusion to the appearance similar to *P. tribuloides.*

Syn.: *Cryptophoranthus acaulis* Kraenzl., Repert. Spec. Nov. Regni Veg. Beih. 34: 232, 1925.
Ety.: From the Latin *acaulis*, "stemless," referring to the abbreviated ramicauls.

Syn.: *Specklinia tribuloides* (Sw.) Pridgeon & M.W.Chase, Lindleyana 16: 259, 2001.

Plant small, epiphytic, caespitose, roots slender. Ramicauls stout, erect, 1-1.5 cm long, enclosed by 2-3 short, imbricating sheaths. **Leaf** erect, coriaceous, narrowly elliptical, subacute to narrowly obtuse, 3-7 cm long, 0.5-1.5 cm wide, narrowly cuneate below into a subpetiolate base. **Inflorescence** an abbreviated, congested, 2- to 3-flowered raceme, up to 10 mm long, including the peduncle ca. 1 mm long, borne laterally from the ramicaul; floral bracts thin, white, imbricating, up to 5 mm long and broad; pedicels 5 mm long; ovary densely papillose, 0.5 mm long, 1.5 mm wide; **sepals** fleshy, red-orange to brick red, subcarinate, glabrous to sparsely verrucose externally, verrucose within, the dorsal sepal oblong, acute, 7-9 mm long, 2-3 mm wide, 3-veined, with the tip in apposition to the tip of the synsepal, the lateral sepals connate into an oblong-ovate lamina, 7-9.5 mm long, 3-3.75 mm wide, concave above the middle with the tip acute, curved up to meet the tip of the dorsal sepal; **petals** red-brown, ovate, oblique, subacute, cellular-papillose within, 3-3.25 mm long, 1.5 mm wide, 1-veined; **lip** fleshy, oblong, 2.75-3 mm long, 1.25-1.5 mm wide, the apex rounded and denticulate, the disc shallowly channeled between a pair of low, longitudinal, cellular-rugose calli, the base thickened, subtruncate, hinged to the tip of the column-foot; **column** longitudinally winged, bidentate at the apex, 2-2.5 mm long, the anther, rostellum and stigma ventral, the foot 1 mm long.

Representative collections:
JAMAICA: *O. Swartz s.n.* (Holotype of *Epidendrum tribuloides*: S; Isotypes: BM, C, W); without locality, 1857, *Mr. Wilson 156* (K); without collection data, *Purdie s.n.* (K). Beaufort, *Wullschlaegel 1080* (W); moist woods, Nov. 1885, *D. Morris 2402* (K); Mount Airy, alt. 2,000 ft., 20 Oct. 1898, *W. Harris 7546* (BM, K, NY); Maybes River, alt. 2,000 ft., 25 July 1903, *G.E. Nichols 141* (AMES, K, NY); west of Port Antonio, 21 Feb. 1906, *A.E. Wight 108* (AMES, BR); near Troy, 13-18 Sept. 1906, *N.L. Britton 485* (AMES, NY); slopes of John Crow Peak, alt. 200 ft., *W. Fawcett* (BM). **Trelawny**: Windsor Estate, alt. 400 ft., 19 Aug. 1956, *G.R. Proctor 15611* (AMES, IJ); northwest of Troy, alt. 640 m, 10 Nov. 1985, *C. Luer, J. Luer, A. & P. Jesup 11471* (MO).
CUBA: Oriente: 1856-57, *C. Wright 663* (BR, HAC, K, NY, W); Oriente: near Monte Verde, Jan.-July 1859, *C. Wright 663* (K, NY, W); 1860-64, *C. Wright 663* (BM); Monte Verde, alt. 660 m, 13 Feb. 1911, *J.A. Schafer 8697* (AMES, K, NY); Sierra Maestra, trail between Magdalena Sierra Maestra, Sevilla Estate, alt. 2,200 ft. 16 Sept. 1906, *N. Taylor 417* (NY); La Perla, 15 Feb. 1911, *J.A. Schafer 8808* (AMES, NY). **Pinar del Río**: Sierra de Los Organos, alt. 400-500 m, 18 Nov. 1941, *C.V. Morton 4308* (AMES, K, NY, US). **Santa Clara**: Pitajonesto Ciegos de Ponciano, 20 Feb. 1912, *J.A. Schafer 12257* (NY); Trinidad Mountains, Hanabanilla Falls, 1 Mar. 1910, *N.L. Britton 4864* (NY); south of Cumanayagua, 5 July 1953, *R.L. Dressler 1314* (US). **Santiago de Cuba**: Santa Maria de Loreta, 20 May 1959, *M. López F. 3025* (HAC). **Holguín**: Moa, Salto de Guayabo, alt. 350 m, 27 Nov. 1997, *C. Luer, J. Luer, M. Diaz & J. Llamacho 18645* (MO). **Las Villas**: Sancti Spíritus, Alturas de Sancti Spíritus, alt. 500 m, 16 Nov. 1975, *A. Alvarez, J. Bisse, 15173* (JE).
HAITI: Riviere Glace, alt. 2,200 ft., 5 May 1944, *J.T. Curtis 35* (AMES).
MEXICO: **Jalapa**: above Jalapa, alt. 4,000 ft., 1840, *Galeotti 5181* (holotype of *P. spathulata*: W); without locality, *F.E. Leibold 615* (holotype of *P. fallax*: W); *F.E. Leibold 44, 45* (W); *F.E. Leibold s.n.* (K); near Mirador, Feb. 1842, *F. Liebmann 7320* (orchid nr. 526) (C); *Ehrenberg & Lehmann 44* (W). Cordoba: Apr. 1898, *M.L. Kienast s.n.* (K). **Vera Cruz**: Zacuapan, Mar. 1913, *C.A. Purpus 2124* (BREM).
GUATEMALA: **Izabal**: La Vigia, between Bananera and Quiriguá, *M.W. Lewis 175* (AMES).
NICARAGUA: **Granada**: Volcán Mombacho, *J. Atwood & D. Neill 7046* (F, MO). **Zelaya**: Río Mico, alt. 370 m, *A. Heller 3572* (SEL).

COSTA RICA: **Cartago**: *A.S. Oersted s.n.* (W); Irazú, alt. 6,000-7,000 ft., 1845-48, *A.S. Oersted 7305* (C); Mina Iglesias, Río Barranca, alt. 3,000 ft., 1868, *A. Endres 62* (holotype of *Cryptophoranthus acaulis*: W); without locality, ca. 1867, *A. Endres 44* (W); Los Cartagos, alt. 1900 m, Mar. 1974, *F. G. Brieger s.n.* (K). **Guanacaste**: near Candelaria, alt. 1100 m, 29 June 1989, *J.T. Atwood 89-249* (K, SEL).
PANAMA: **Chiriquí**: banks of Caldera River, alt. 1360 m, *Powell 237* (AMES).
SURINAME: Beaufort, *Wullschlaegel 1080* (W).

This well-known species, without close relatives except for the rare. recently discovered, Costa Rican *Tribulago blancoi* (Pupulin) Luer, is common and widely distributed in Central America and the Greater Antilles. It is easily recognized by the short racemes of brick red flowers produced at the bases of narrow, fleshy leaves. The ovaries and the interior of the acute sepals are verrucose. The tip of the dorsal sepal is in contact with the tip of the synsepal, as seen in *Sarcinula alexii* (A.H.Heller) Luer, with lateral windows, but not connate as in species of *Zootrophion* Luer. The petals are simple and obtuse, and the lip is oblong and cellular-glandular with transverse, cellular (gill-like) lamellae down the center. The ovary is short, broad, and densely spiculate-papillose, which gives a burr-like appearance to the capsule.

Illustration: (Icones-III): 91, 1986, Plate 48, C. Luer 8110.

TRIDELTA

Tridelta Luer, gen. nov.

Type: *Cryptophoranthus aurantiacus* Dod., Moscosoa 1: 50, 1976.
Ety.: From the three initials of Donald D. Dod, who collected and described this unique species.

Folia denticulata. Inflorescentia uniflora. Sepala synsepalumque semiconnata. Labellum alticarinatum. Columna profunde alata cum labello articulata.

The description of the only species will suffice for the genus.

Tridelta aurantiaca (Dod) Luer, comb. nov.

Bas.: *Cryptophoranthus aurantiacus* Dod, Moscosoa 1: 50, 1976.
Ety.: From the Latin *aurantiacus*, "orange," referring to the color of the flower.

Syn.: *Pleurothallis spiloporphyrea* Dod, Moscosoa 1(3): 57, 1978, as *P. spilo-porphureus*.
Ety.: From the Greek *spilos*, "spot," and *porphyra*, "purple," hence purple-spotted.

Syn.: *Pleurothallis neibana* Dod, Moscosoa 3: 101, 1984, as *P. neibanus*, replaced name for *Cryptophoranthus aurantiacus* Dod.
Ety.: Named for the Sierra de Neiba where the species was collected.
Syn.: *Acianthera neibana* (Dod) Pridgeon & M.W.Chase, Lindleyana 16: 245, 2001.

Plant small, epiphytic, caespitose; roots slender. Ramicauls stout, erect, 3-6 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, elliptical, subacute to obtuse, with denticulate-erose margins, subpetiolate, 10-25 mm long including a petiole 1-4 mm long, 3-7 mm wide, the base cuneate into the petiole. **Inflorescence** a single flower borne by a peduncle 1-5 mm long, laterally from the ramicaul; floral bract oblique, acute, 3 mm long; pedicel 2 mm long with a filament 2-3 mm long; ovary 2 mm long; **sepals** orange, glabrous, fleshy, the dorsal sepal elliptical-ovate, concave, acute to subacute, 6.5-7 mm long, 2.5 mm wide expanded, 3-veined, connate basally to the lateral sepals for 1-3 mm, the lateral sepals connate into a concave, ovoid, obtuse synsepal, 6-6.5 mm long, 4-5 mm wide expanded; **petals** glabrous, oblong, acute, 3-4 mm long, 0.5-0.8 mm wide, 1-veined; **lip** thick, oblong, 2.9 mm long, 0.8 mm wide, the apex obtuse, disc channeled between a pair of tall, lamellae above the middle, the base subtruncate with a slender, acute, retrorse process at the corners, hinged to the tip of the column-foot; **column** with deep, triangular wings above the middle that fit to either side of the labellar laminae, 2 mm long, the anther and stigma ventral, the foot 1 mm long; pollinia 2, naked.

DOMINICAN REPUBLIC: **Constanza**: Hierba Buena, between Hondo Valle and Sierra de Neiba, alt. 1300 m, 18 May 1975, cultivated 10 Oct. 1975, *D.D. Dod 500* (Holotype of *Cryptophoranthus aurantiacus*: SDM; Isotypes AMES, SEL), C. Luer illustr. 14804; Loma de Pena, el Corralito, alt. 1600 m, 15 Mar. 1977, cultivated 6 June 1977, *D.D. Dod 622* (holotype of *P. spiloporphyrea*: SDM; Isotypes: AMES, NY, SEL, US), C. Luer illustr. 18524; Loma cerca de Calimete, Hondo Valle, alt. 1600, 15 Nov. 1969, *D.D. Dod 199* (AMES).

First described as *Cryptophoranthus aurantiacus* Dod in 1976 by Donald Dod, Dod transferred this species to *Pleurothallis* R.Br. in 1983 as *P. neibanus* Dod, the epithet *aurantiaca* already being occupied by a Brazilian species. However, Dod had described another collection of the same species in 1977 as *Pleurothallis spiloporphyrea* Dod [=*Tridelta aurantiaca* (Dod) Luer].

As with many other Hispaniolan taxa, the margins of the leaves of this species are minutely denticulate. The short-stemmed flower is borne singly; the dorsal sepal is deeply connate to a concave synsepal; the petals are narrowly oblong; and the lip is bilamellate above the middle, the laminae fitting between broad, descending wings of the column from above. No close relative is known.

Illustration: Fig. 184 herein, C. Luer illustr. 14804.

XENOSIA

Xenosia Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 263, 2004.

Ety.: From the Greek *xenion*, "a stranger," referring to unfamiliar physical features.

Type: *Pleurothallis xenion* Luer & R.Escobar) Luer, Orquideología 16: 38, 1983.

Syn.: *Pleurothallis* subgen. *Xenion* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 96, 1986.

This genus of two species is distinguished by a densely ascending habit with bundles of short ramicauls; an elongated, winged column with a ventral anther and stigma; and lip with a central cavity and a truncate base that is inflexibly attached to the column-foot.

Xenosia macrorhiza (Lindl.) Luer, comb. nov.

Bas.: *Pleurothallis macrorhiza* Lindl. in Hook., J. Bot. 1: 9, 1834.

Ety.: From the Greek *macrorhiza*, "with big rhizome," referring to that structure.

Syn.: *Pleurothallis rhizomatosa* Schltr., Repert. Spec. Nov. Regni Veg. Beih. 8: 62, 1921.

Ety.: From the Greek *rhizomatosus*, "with big roots," referring to the thick, fleshy roots.

Syn.: *Pleurothallis macrorhiza* Kraenzl., Engl. Jahrb. 26: 446, 1899, not Lindl.

Syn.: *Xenosia spiralis* (Ruiz & Pav.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 265, 2004.

Plant medium in size, epiphytic, repent, the rhizomes 0.3-0.5 mm thick, 10-40 cm long, 1-3 cm long between ramicauls; roots descending, slender. Ramicauls stout, ascending-erect, 1-3 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, thickly coriaceous, narrowly elliptical, acute to subacute, subpetiolate, 3-8 cm long, 0.5-0.8 cm wide, narrowed below into an ill-defined petiole ca. 0.5 cm long. **Inflorescence** 1-3 loose, few-flowered racemes to 5 cm long, borne by a slender peduncle 1.5-3 cm long, from the ramicaul below the apex; floral bract 3 mm long; pedicel 1.5-5 mm long; ovary 2-3 mm long. **sepals** yellow-orange, glabrous, the dorsal sepal elliptical-ovate, acute, 10-11 mm long, 4-4.5 mm wide, 3-veined, the lateral sepals connate above the middle into a synsepal, 11-12 mm long, 6.5-7 mm wide, 4-veined; **petals** translucent yellow-orange, obovate, broadly obtuse, unguiculate, 4.5-5 mm long, 2.5 mm wide, 1-veined; **lip** yellow-orange, subovate-trilobed, 7-8 mm long, 4-5 mm wide, the apex obtuse, minutely verrucose, the sides below the middle erect, broadly rounded, the disc with a deep, central cavity, the base bicallous, truncate, inflexibly connate to the tip of the column-foot; **column** stout, 2 mm long, the anther and stigma apical, the column-foot with extension 1.5 mm long.

Representative collections:
ECUADOR: **Azuay**: sine loc., *Prof. Jameson s.n.* (Holotype: K); mountains of Azogues, Hato de la Virgin, near Cuenca, *Th. Hartweg s.n.* (Paratype: K); Cuenca, wooded hills, SEpt. 1864, *W. Jameson s.n.* (K, W); near Manibinia, alt. 10,000 ft., 2 Sept. 1878, *F.C. Lehmann s.n.* (W); west Andes of Cuenca, alt. 2800-3000 m, Oct. *F.C. Lehmann 4652* (K); Cerro Jambillo, between Gordeleg and San Bartolo, alt. 2800-3000 m, *F.C. Lehmann 6493* (holotype of *P. rhizomatosa* destroyed at B, lectotype here designated: K; lectoisotypes: AMES, LE, US; south of Cumbe in mountain scrub, alt. 2900-3300 m, 4-22 Apr. 1968, *G. Harling, G. Storm & B. Ström 7994, 8332, 8693, 8708* (GB); terrestrial near Cañar, alt. 3300 m, 8 Feb. 1987, *C. Luer, J. Luer & A. Hirtz 12728* (K, MO); Sayausíd, terrestrial, alt. 3000 m, 1 Apr. 1968, *G. Harling, G. Storm & B. Ström 7936* (GB); between Sayausíd and Cajas, alt. 3000 m, 15 June 1979, *B. Løjtnant, A. & U. Molau 14834* (AAU, GB, MO); Sayausíd, terrestrial, alt. 3000 m, 1 Apr. 1968, *G.*

Harling, G. Storm & B. Ström 7936 (GB). **Chimborazo**: vicinity of Huigra, Hda. Licay, 17 Aug. 191, *J.N. Rose & G. Rose 22151* (AMES, NY, US); "Huigra," alt. 1200 m, 4 July 1923, *A.S. Hitchcock 20748* (AMES, NY, US). **Morona-Santiago**: scrubby vegetation east of Sigsig, alt. 2750 m, 15 May 1988, *C. Luer, A. Hirtz et al. 13326* (K, MO). **Pichincha**: orange grove between Patricia Pilar and Santo Domingo, alt. 1900 m, 28 July, 1980, *R. Sauleda, M. Ragan, H. Luther, R. Wunderlin, et al. 3789* (AMES, USF). Sine loc., cultivated by Veitch, Apr. 1868, collected by *Pierce s.n* (K).
COLOMBIA: **Cauca**: Popayán, *Th. Hartweg 1415* (K); Forests of Yunquillahuia, alt. 2800-3000 m, *F.C. Lehmann 4625* (W).
PERU: **Ancash**: Yungay, above Laguna Llanganuco, alt. 4000 m, 26 June 1966, *G. Edwin & J, Schuncke 3812* (AMES, F, MO). **Chiclayo**: Río Taulis above La Playa, alt. 2800 m, 3 Sept. 1964, *P.C. Hutchison & K. von Bismarck 6479* (AMES, F, NY, UC, USM). *Chasqui*: alt. 10,500 ft., 27 Sept. 1922, *Macbride & Featherstone 2455* (AMES, F). **Chinchapalca**: above Mito, alt. 9,500 ft., 16-27 July 1922, *Macbride & Featherstone 1602* (AMES, F); Yungay, Quebrada de Llanganuco, alt. 3400 m, 8 Apr. 1986, *M. Dillon et al. 4452* (F, MO). **Piura**: Huancabamba, alt. 3000 m, 1 Mar. 1988, *A. & D. Bennett B-4270* (MO).
BRAZIL: sine loc., 1879, *H. Wawra s.n.* (W).

This relatively common, locally abundant species climbs in scrub vegetation usually at high altitudes in the Andes of Colombia, Ecuador, and Peru. A thick rhizome, "as thick as a goosequill" to quote John Lindley, bears a series of thick, ascending leaves and "great, coarse, white roots." Rather large, orange flowers are borne successively in loose racemes. The lateral sepals are connate behind a rather large lip with a sharply defined, central cavity.

Illustration: Fig. 185 herein, C. Luer illustr.

Xenosia xenion (Luer & R.Escobar) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 265, 2004.

Bas.: *Pleurothallis xenion* Luer & R.Escobar, Orquideología 16: 38, 1983.
Ety.: From the Greek *xenion*, "a stranger," referring to unfamiliar physical features.

Plant small, epiphytic, ascending-repent, the rhizome 5-10 mm long between ramicauls, producing a length 30-40 cm long; roots fleshy. Ramicauls slender, erect, 1-3 cm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, linear-elliptical, acute, 5-7.5 cm long, 0.5-0.6 mm wide, gradually narrowed below into the subpetiolte base. **Inflorescence** a single flower, borne by a slender peduncle 5-17 mm long, borne laterally from the ramicaul; floral bract 2.5 mm long; pedicel 6-7 mm long; ovary 3 mm long, purple-costate; **sepals** glabrous, carinate, translucent white, suffused and veined in purple, the dorsal sepal ovate, concave, 12 mm long, 7 mm wide, 3-veined, with the apex acute, contracted into a slender tail 10 mm long, the lateral sepals free, ovate, oblique, acute, 23 mm long, 4.5 mm wide, with the apices acuminate into slender tails; **petals** translucent, obovate-flabellate, unguiculate, 6 mm long, 4.5 mm wide, the apex broadly obtuse, minutely irregular-denticulate; **lip** yellow, suffused with purple, oblong-trilobed, 10 mm long, 4 mm wide, obovate above the middle, densely long-pubescent, the apex rounded, the lobes basal, erect, oblique, oblong, truncate, 3 mm long, the disc with an elliptical cleft, the base truncate, broadly fixed to the column-foot; **column** purple, slender, semiterete, winged at the apex, 3.5 mm long, the anther and stigma ventral, the foot 2 mm long.

COLOMBIA: **Boyacá**: scrub forest above Guicán, alt. 3100 m, 27 May 1982, *C. Luer, R. Escobar & D. Portillo 7981* (Holotype: SEL; Isotypes: COL, JAUM); same vicinity, alt. 3200 m, 28 May 1982, *C. Luer, R. Escobar & D. Portillo 7981A* (SEL).

This species, endemic in the Eastern Cordillera of Colombia, is superficially similar to the Peruvian *Masdevalliantha longiserpens* (C.Schweinf.) Szlach. & Marg., but differs in the morphology of the lip and its attachment to the column-foot. Instead of an elongated tip of the column-foot that protrudes into a cavity at the base of the lip, the truncate base of the lip is inflexibly attached to the column-foot, as it is in the other member of this small genus.

Illustration: Icones-III: 96, 1986, Plate 52, C. Luer illustr. 7981.

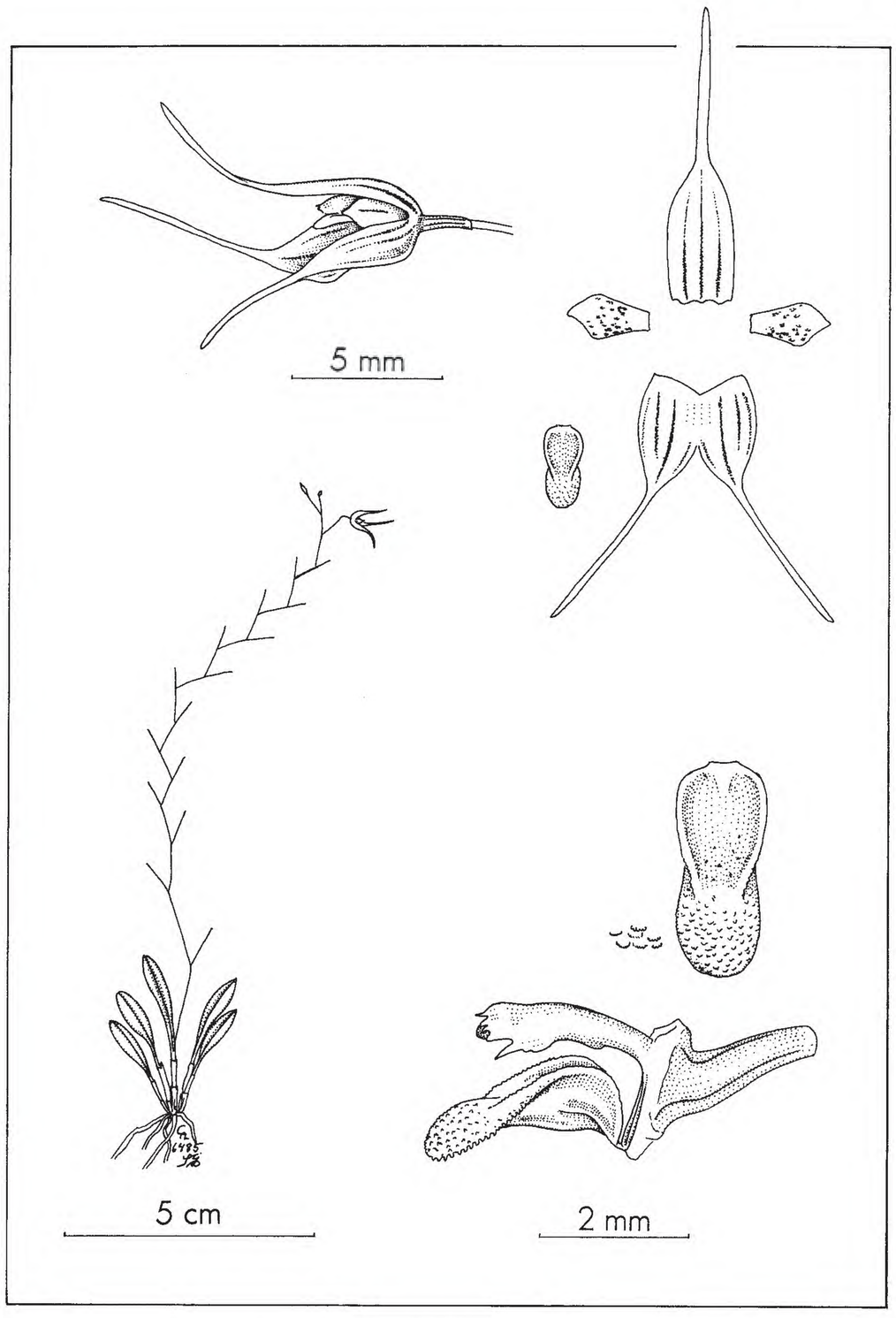


Fig. 179. Sylphia cabellensis

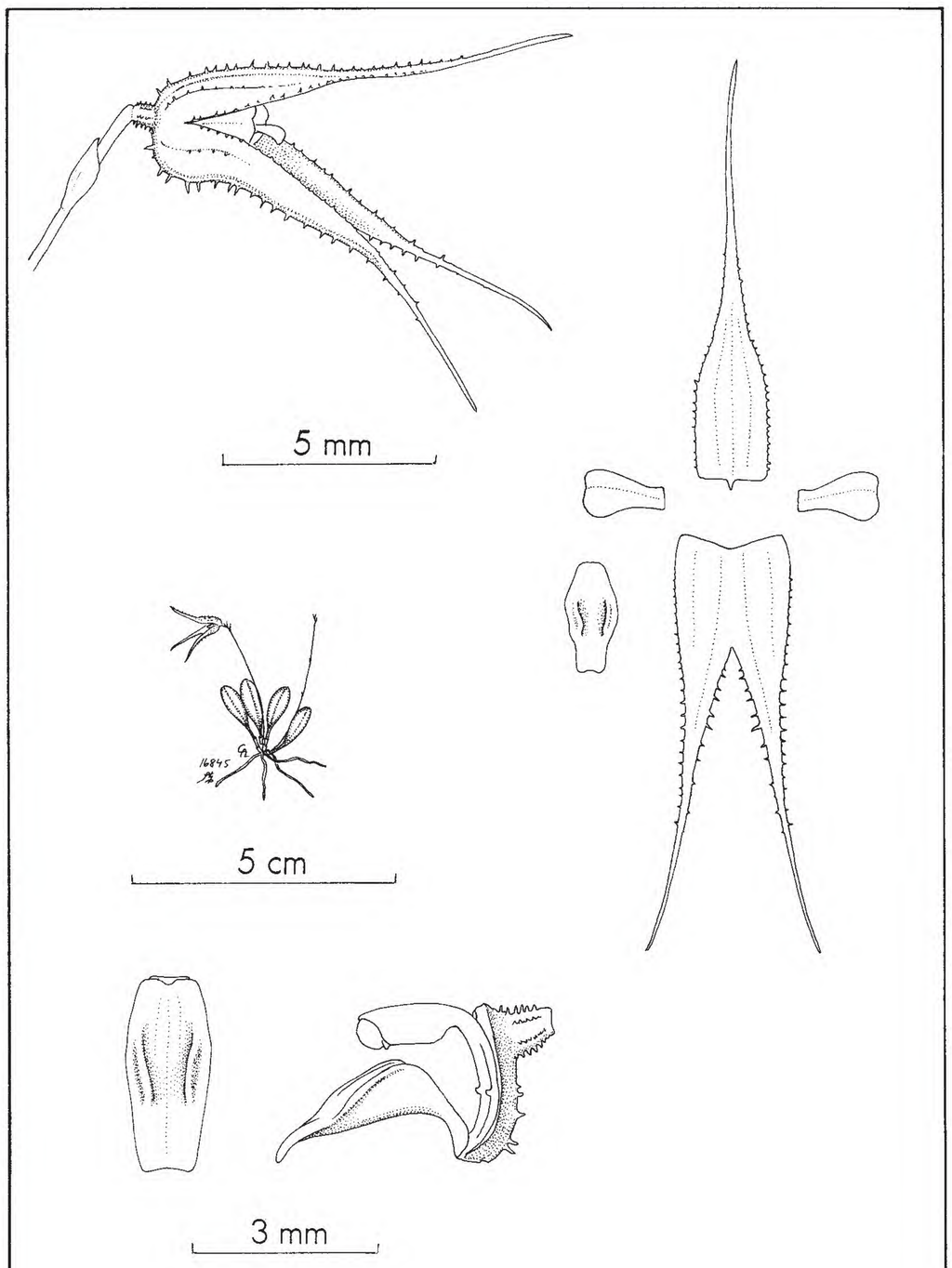


Fig. 180. Sylphia cactantha

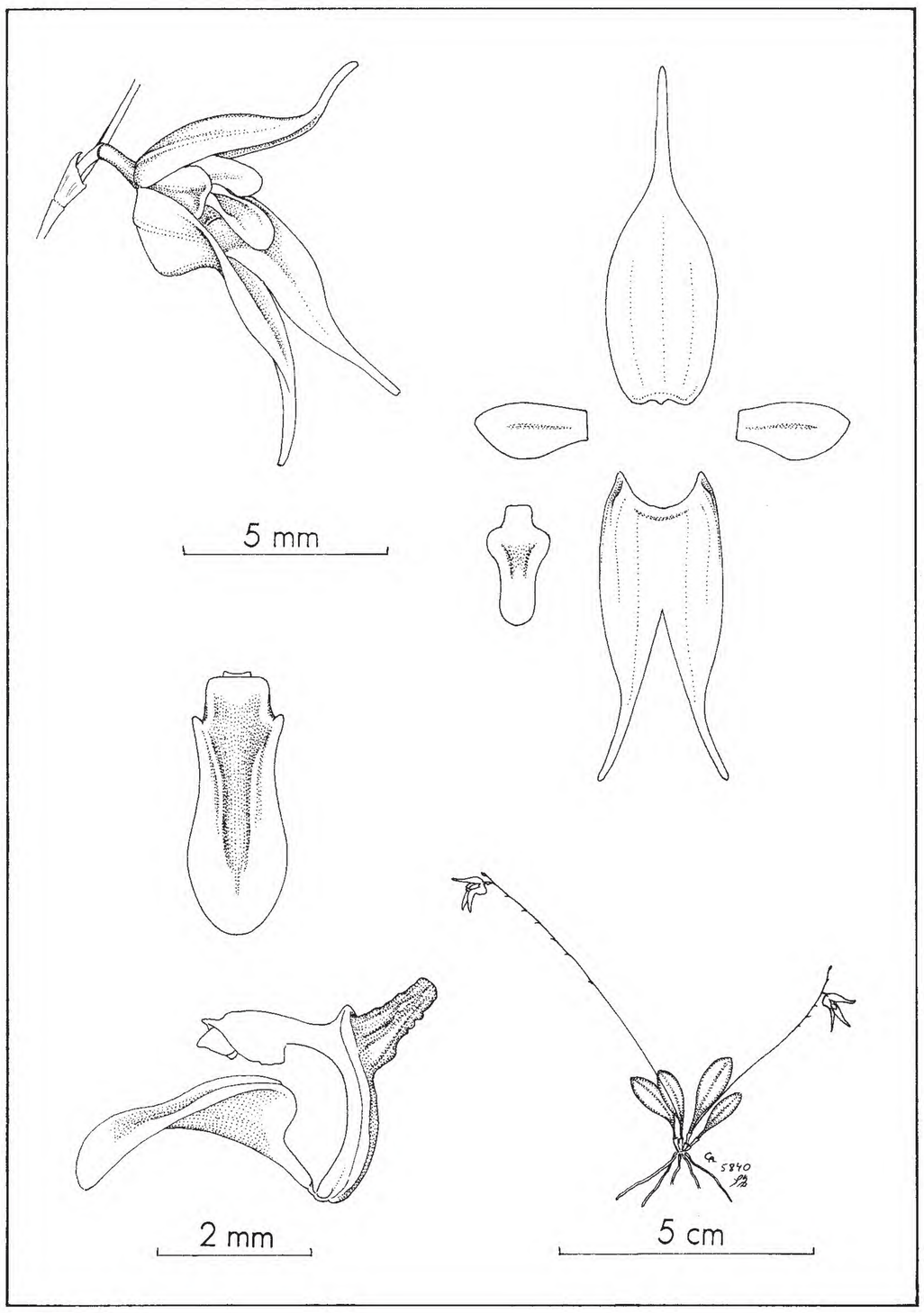


Fig. 181a. Sylphia fuegii

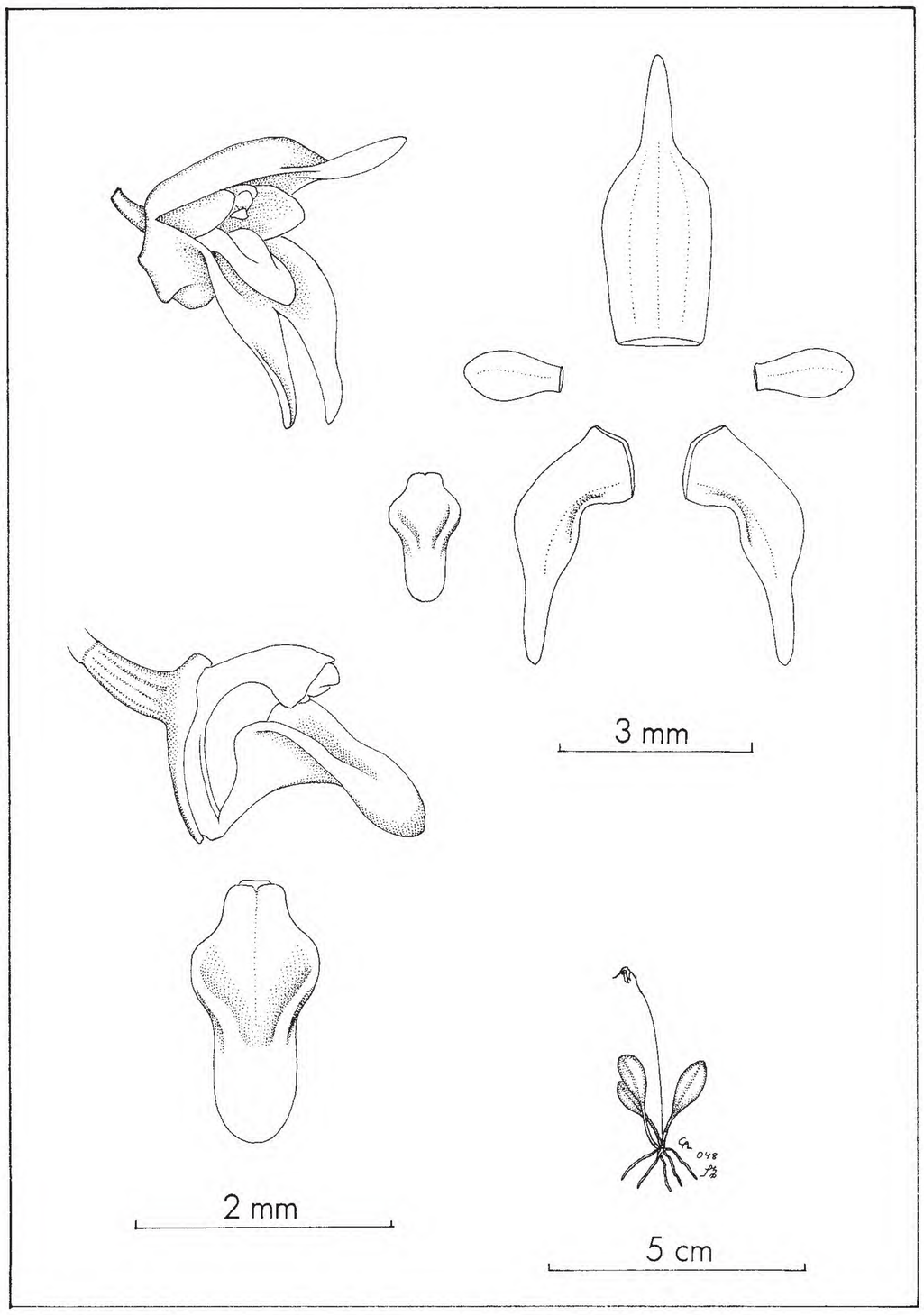


Fig. 181b. Sylphia fuegii
Pleurothallis hagsateri

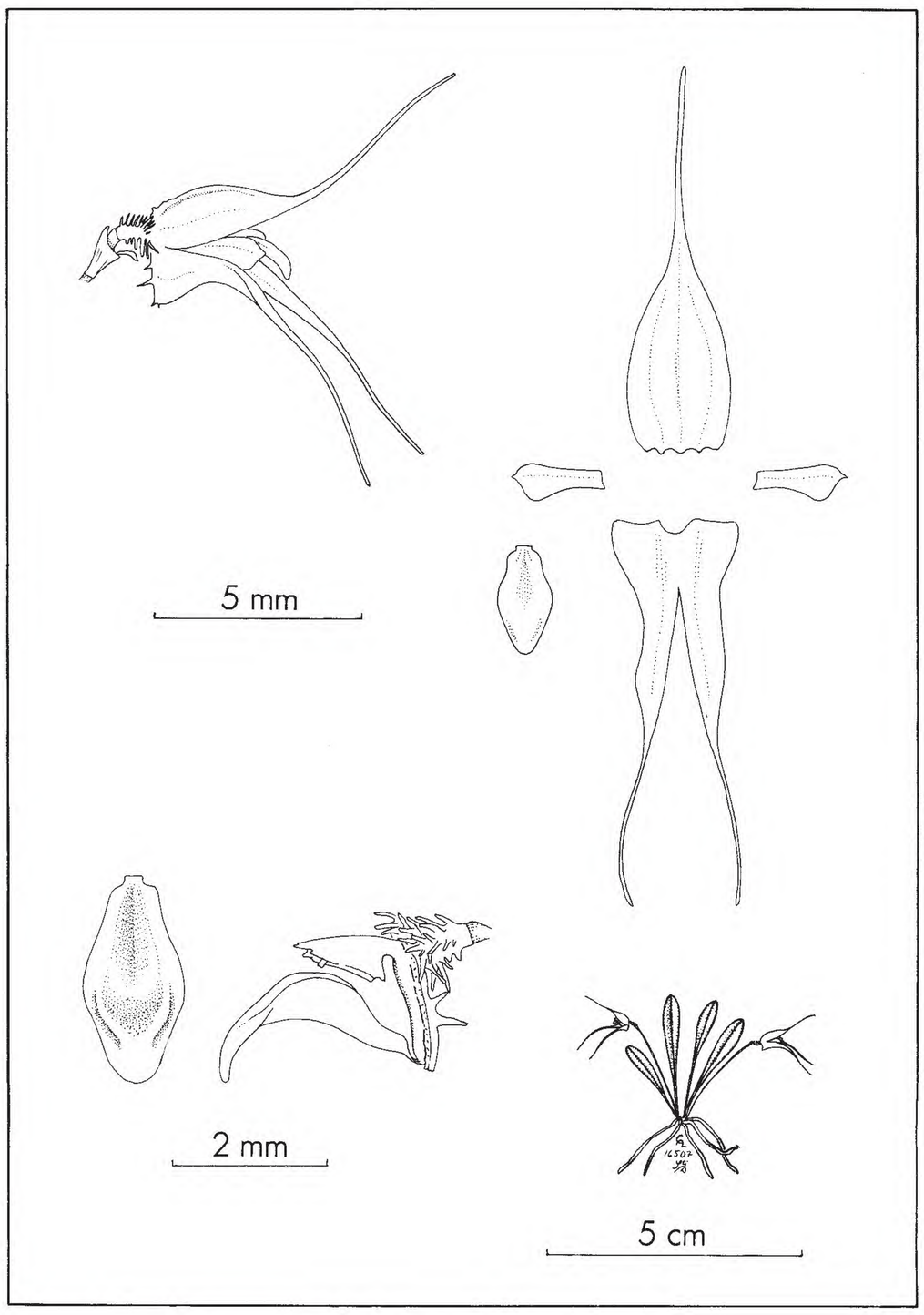


Fig. 182. Sylphia turrialba

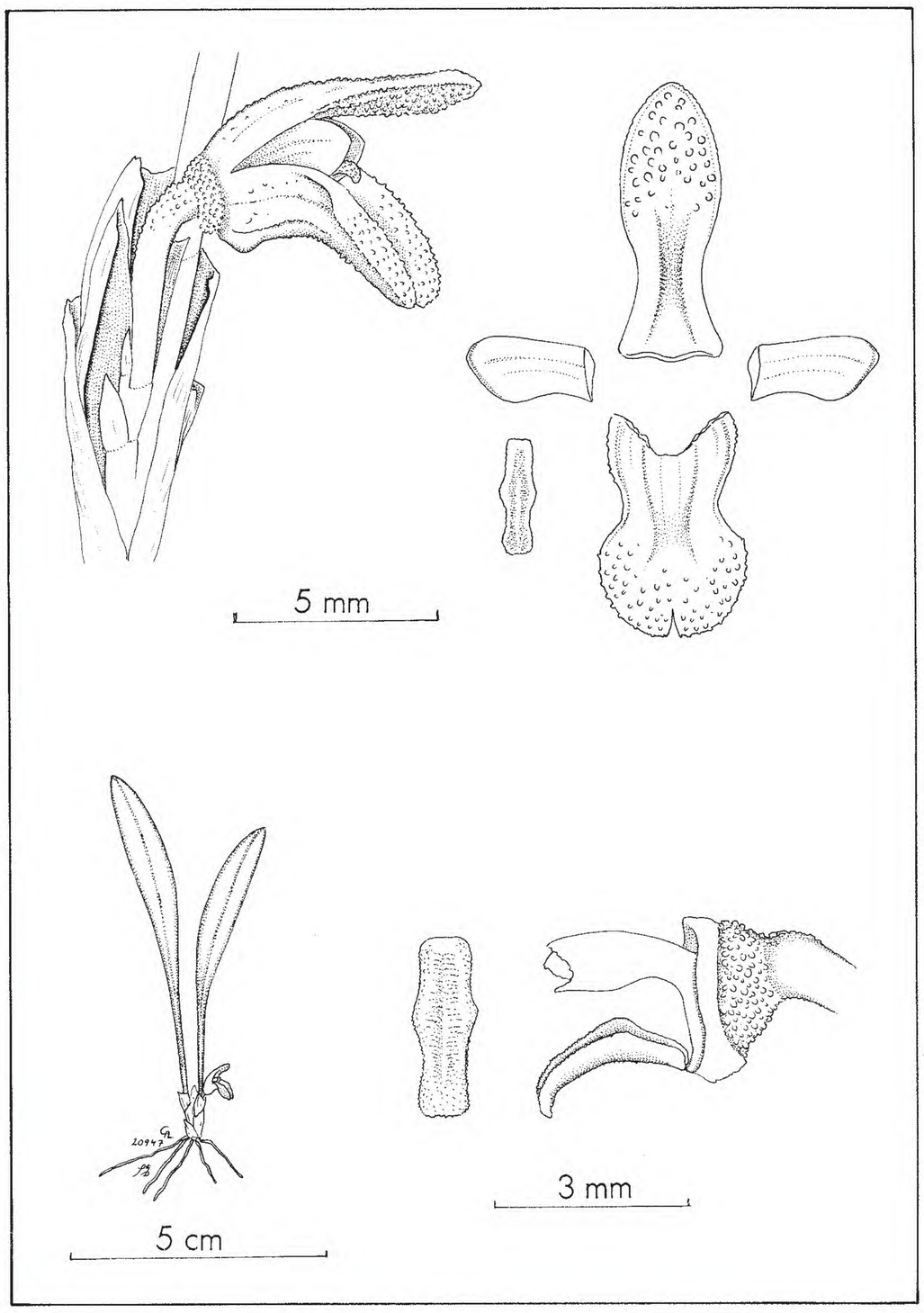


Fig. 183. Tribulago blancoi

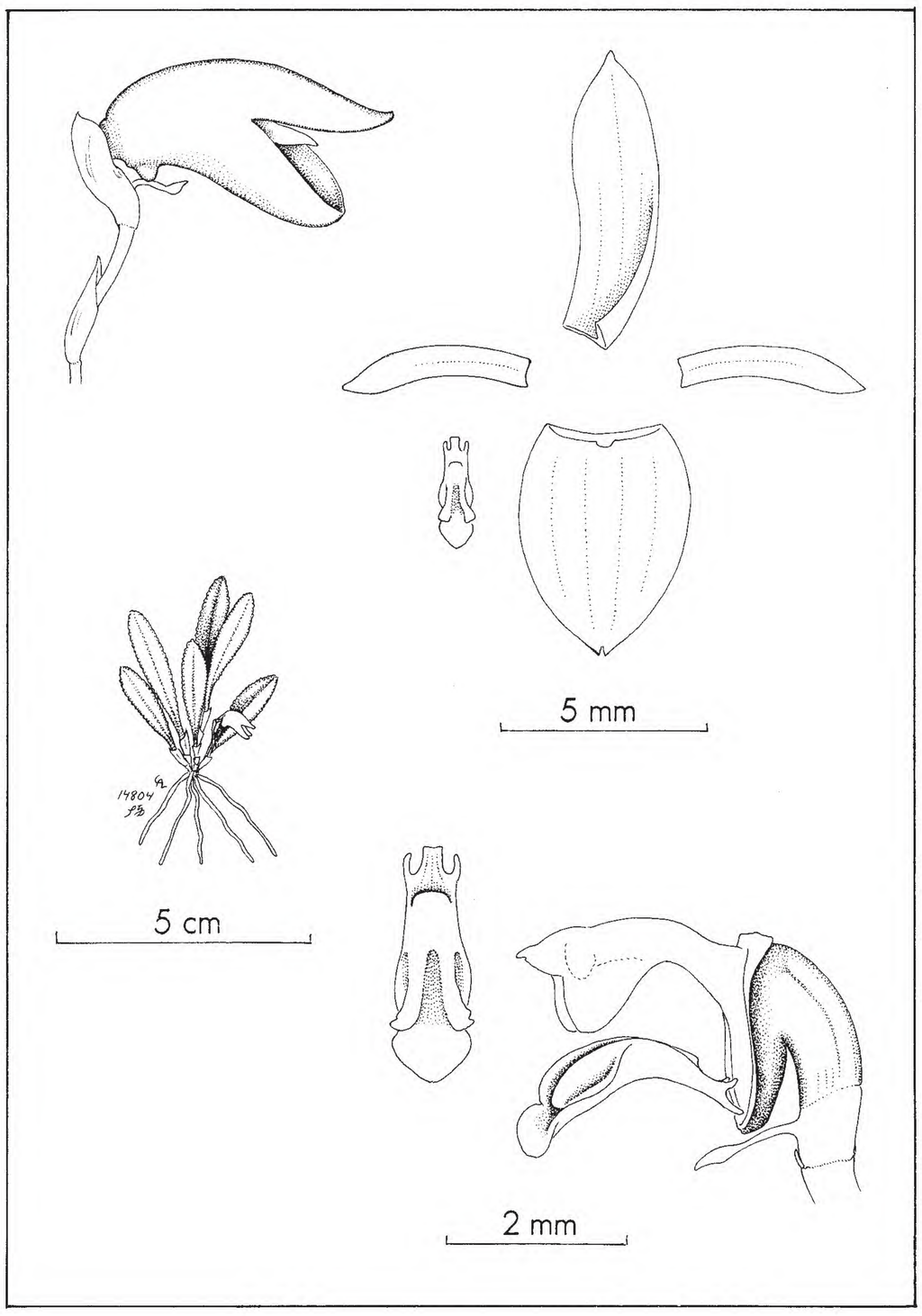


Fig. 184. Tridelta aurantiaca

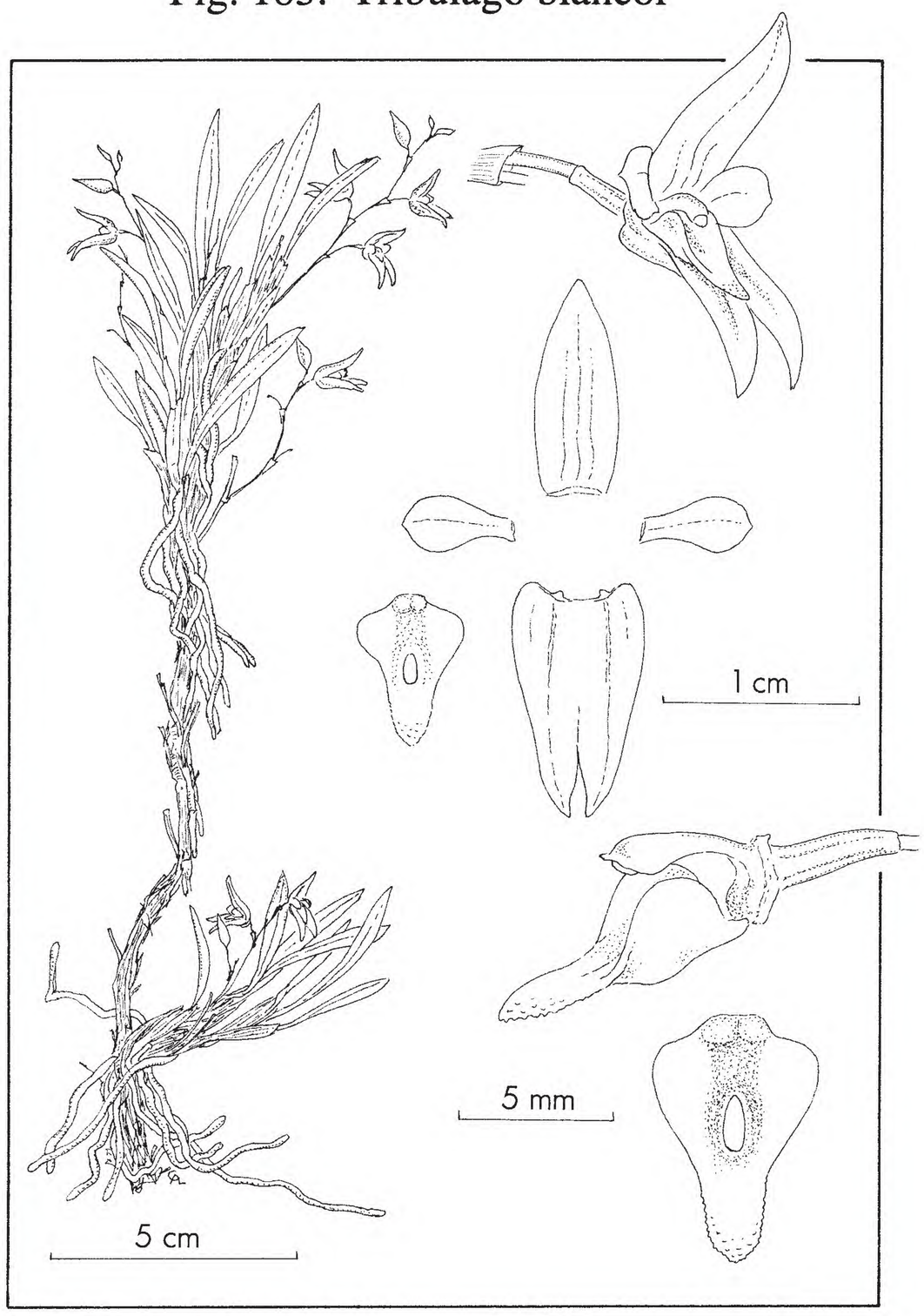


Fig. 185. Xenosia macrorhiza

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----------2002. A systematic method of classification of the Pleurothallidinae versus a strictly phylogenetic method. Selbyana 23(1): 57-100.

PRIDGEON, A.M. & M.W. CHASE, 2001. A phylogenetic reclassification of Pleurothallidinae. Lindleyana 16(4): 235-271.

ABBREVIATIONS:

Names of Authors according to R.K. Brummitt & C.E. Powell, Aurhors of Plant Names, 1992.

Names of Publications according to Botanico-Perodicum-Huntianum, 1968.

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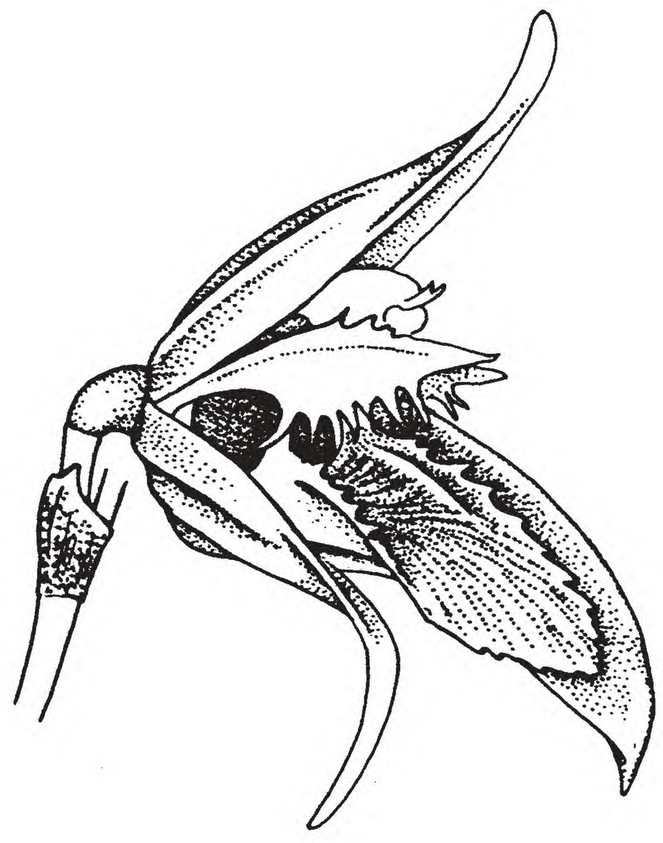
I thank all the herbaria that have allowed invaluable access to their collections, especially the herbaria of AMES, K, and W for their most important, historical collections. I thank Dan Nicolson for his advice on numerous occasions. I thank Victoria Hollowell and Jennifer Gruhn of MO for their hours of proofreading.

I also thank the Pleurothallid Alliance and those members who made possible the inking by Stig Dalström of so many of the illustrations.



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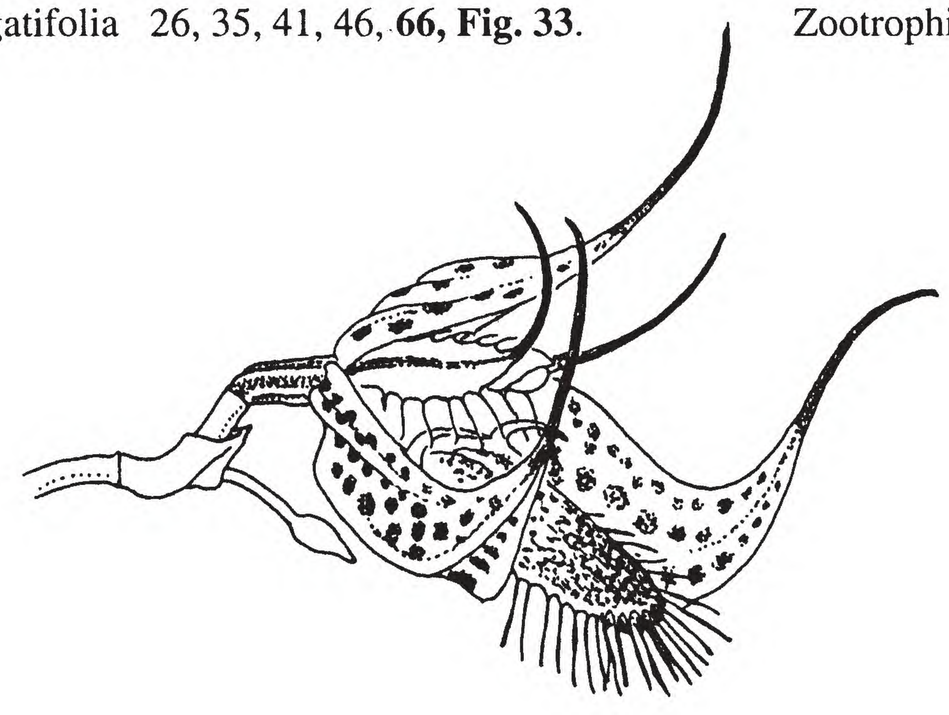


MISCELLANEOUS NEW TAXA IN THE PLEUROTHALLIDINAE (ORCHIDAEAE)

The following new pleurothallid taxa in 15 genera (*Acianthera* Scheidw., *Acronia* Presl, *Arthrosia* (Luer) Luer, *Colombiana* Ospina, *Crocodeilanthe* Rchb.f. & Warsz., *Dracula* Luer, *Dryadella*, Luer, *Loddigesia* Luer, *Myoxanthus* Poepp. & Endl., *Ogygia* Luer, *Physosiphon* Lindl., *Platystele* Schltr., *Porroglossum* Schltr., *Restrepia* Kunth., and *Trichosalpinx* Luer), have come to my attention.

Acianthera rinkei Luer, new species
Acronia cordata (Ruiz & Pav.) Luer, new combination
Acronia lynniana Luer, new species
Acronia pyelophera Luer, new species
Acronia tobarii Luer & Hirtz, new species
Arthrosia Luer, new genus
Arthrosia auriculata (Lindl.) Luer, new combination
Arthrosia barbacenensis (Barb.Rodr.) Luer, new combination
Arthrosia caldensis (Hoehne & Schltr.) Luer, new combination
Arthrosia duartei (Hoehne) Luer, new combination
Arthrosia floribunda (Lindl.) Luer, new combination
Arthrosia freyi Luer, new species
Arthrosia hygrophila (Barb.Rodr.) Luer, new combination
Arthrosia malachantha (Rchb.f.) Luer, new combination
Arthrosia muscosa (Barb. Rodr.) Luer, new combination
Arthrosia purpurea-violacea (Kraenzl.) Luer, new combination
Colombiana cosmetron (Luer) Luer, new combination
Colombiana silverstonei (Luer) Luer, new combination
Crocodeilanthe suinii Luer, new species
Dracula saulii Luer & Sijm, new species
Dryadella marilyniana Luer, new species
Loddigesia Luer, new genus
Loddigesia quadrifida (La Llave & Lex.) Luer, new combination
Myoxanthus werneri Luer, new species
Ogygia Luer, new genus
Ogygia unguicallosumm (Ames & C.Schweinf.) Luer,
Physosiphon asperrimus (Luer) Luer, new combination
Platystele tobarii Luer, new species
Porroglossum marniae Luer, new species
Porroglossum parsonsii Luer, new species
Porroglossum sijmii Luer, new species
Restrepia persicina Luer & Hirtz, new species
Trichosalpinx jostii Luer & Dalström, new species

Acianthera rinkei Luer, sp. nov. Fig. 1.

Ety.: Named for Bryon K. Rinke of Winfield, KS, who imported and cultivates this species.

Species haec *Aciantherae aechmi* (Luer) Pridgeon & M.W.Chase affinis, sed sepalis carnosissimis, synsepalo concavo et labello verrucoso differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls sharply winged, laterally compressed and sulcate from below the middle, suberect to horizontal, to 12 cm long, with a tubular sheath from above the base and another tubular sheath at the base. **Leaf** erect in relation to the ramicaul, thinly coriaceous, elliptical, acute, acuminate, 12-15 cm long, 4.5 cm wide, the basal margins decurrent up to 3 cm onto the ramicaul. **Inflorescence** a single, a simultaneously several-flowered raceme ca. 2 cm long, borne on top of the leaf, subtended by a spathe 12 mm long from the apex of the ramicaul, 3 cm above the lowermost portion of the leaf; peduncle ca. 3 mm long; floral bracts 2.5 mm long; pedicels 1 mm long; ovary 1.5 mm long, densely short-pubescent; **sepals** fleshy, minutely pubescent externally, ochre with small, dark brown spots, the dorsal sepal narrowly oblong, obtuse, 8 mm long, 3 mm wide, 3-veined, free from the lateral sepals, the lateral sepals connate into a broadly ovoid, obtuse, minutely bifid, concave synsepal with incurved margins, 7.5 mm long, 6 mm wide unexpanded, 6-veined; **petals** oblong-spathulate, obtuse, 3.5 mm long, 1 mm wide, 1-veined, with the margins minutely denticulate toward the apex; **lip** dark brown, thick, fleshy, oblong-trilobed, 5.5 mm long, 3.5 mm wide, the apex rounded, entire, the lateral lobes erect, oblong, obtuse, below the middle, the disc with a thick pair of parallel, verrucose calli on the middle third anterior to the marginal lobes, the base truncate, obscurely minutely lobed at the angles, hinged to the tip of the column-foot; **column** slender, 3.5 mm long, dilated in distal quarter, the foot thick, 3 mm long, the anther, rostellum and stigma ventral.

ECUADOR: without locality, collected by Ecuagenera, cultivated in Winfield, KS, Jan. 2006, by *B. Rinke s.n.* (Holotype: MO), C. Luer illustr. 20999.

This species is native to Ecuador, but collection data are unknown. It is most closely related to *Acianthera aechme*, but it is distinguished from the latter by thin leaves that are decurrent onto a sharply winged ramicaul, and as with the former, a short, simultaneously flowered raceme is borne on the top surface of the leaf. The sepals are thickly fleshy and pubescent externally. The synsepal is concave with incurved, not recurved, margins. The lip is thick and elliptical with verrucose calli on the disc, and with erect, obtuse, marginal lobes below the middle.

The following combination needs to be made because of the omission of *comb. nov.*

Acronia cordata (Ruiz & Pav.) Luer, comb. nov., Monogr. Syst. Bot. Missouri Bot. Gard. 103: 114, 2005.

Bas.: *Humboldtia cordata* Riuz & Pav., Syst. Veg. 234, 1798.

Acronia lynniana Luer, sp. nov. Fig. 2.

Ety.: Named for Lynn O'Shaughnessy of Howell, MI, who imported and cultivates this species.

Species haec *Acroniae cardiostolae* (Rchb.f.) Luer affinis, sed spatha reclinata, ovario densissime minuti-papilloso, sepalis rubrostriatis et labello obtuse triangulari differt.

Plant medium in size, presumably epiphytic, caespitose; roots slender. Ramicauls slender, erect, 5-9 cm long, with a loose sheath below the middle and 2-3 short sheaths at the base. **Leaf** spreading, more or less horizontal, coriaceous, narrowly ovate with the sides revolute, 7-9.5 cm long, 3-4.5 cm wide expanded, the apex acute, the base sessile, deeply cordate with the lobes about 1 cm deep. **Inflorescence** a single, successive flower borne from a reclining, conduplicate spathe, 14 mm long, 5 mm broad, at the base of the leaf; peduncles 1-2 mm long, confined within the spathe with the floral bracts, the latter being ca. 15 mm long; pedicels 20 mm long; ovary 4 mm long, densely minutely papillose; flowers non-resupinate; **sepals** yellow with prominent, red stripes along the veins, cellular-glandular within and without, the lowermost middle sepal ovate to broadly elliptical-ovate, obtuse, more or less convex, 15 mm long, 12 mm wide, 7-veined, the lateral sepals connate into a broadly ovate, obtuse, uppermost synsepal, 14-17 mm long, 14 mm wide expanded, 8-veined; **petals** dark red-veined, oblong, the apex acute, oblique, 11 mm long, 3.5 mm wide, 3-veined; **lip** glabrous, olive-brown, thickly triangular with the apex and basal angles obtuse, 5.5 mm long, 5.5 mm wide, the disc shallowly concave within thickened margins, the base truncate, with a short, broad claw, firmly attached to the column-foot; **column** stout, 3 mm long, 3 mm broad, the anther and bilobed stigma apical, the foot thickly protuberant.

ECUADOR: **Morona-Santiago**: without collection data, collected by Ecuagenera, cultivated in Howell, MI, Feb, 2006, by *L. O'Shaughnessy 03045* (Holotype: MO), C. Luer illustr. 21001.

Among the species related to *Acronia cardiostola* (Rchb.f.) Luer in *Acronia* section *Macrophyllae-Fasciculatae*, this brilliantly colored species is distinct for the large yellow sepals prominently striped in red. Although it does not appear to be related to those species similar to *A. cardiostola*, because of the non-resupinate flower reclining on a reclining spathe, the lip betrays its relationship. The thickly and bluntly triangular lip is shallowly concave within thickened margins, similar to that of all the *A. cardiostola* relatives.

Acronia pyelophera Luer, sp. nov. Fig. 3.

Ety.: From the Greek *pyelopher*, "tub-bearer," referring to the labellum.

Species haec *Acroniae cardiostolae* (Rchb.f.) Luer affinis, sed spatha reclinata, ovario densissime minuti-papilloso, sepalis rubrostriatis et labello alveolato differt.

Plant medium in size, presumably epiphytic, caespitose; roots slender. Ramicauls slender, erect, 7-10 cm long, with a loose sheath below the middle and 2-3 short sheaths at the base. **Leaf** spreading, more or less horizontal, rigidly coriaceous, dark green, ovate with the sides more or less incurved below the middle, 5.5-7 cm long, 3.5-4 cm wide, the apex acute, the base sessile, deeply cordate with the lobes about 1 cm deep. **Inflorescence** a single, successive flower borne from a reclining spathe, 11-12 mm long, at the base of the leaf; peduncles 1-2 mm long, confined within the spathe with the floral bracts and pedicels, the floral bracts 8-10 mm long; pedicels 10-12 mm long; ovary 3.5 mm long, densely minutely papillose; flowers non-resupinate; **sepals** dull rose with prominent, red-purple stripes along the veins, glabrous, the lowermost middle sepal subcircular, obtuse, more or less convex below the middle, 10 mm long, 9 mm wide, 7- to 8-veined, the lateral sepals connate into an ovate, subacute, concave, uppermost synsepal, 11 mm long, 6.5 mm wide expanded, 6-veined; **petals** red-purple, oblong, acute, slightly curved, with cellular margins, 9 mm long, 2 mm wide, 2-veined; **lip** red-purple, thickly scaphoid, with the apex obtuse, 5.5 mm long, 2.75 mm wide, the disc longitudinally concave with broad, minutely papillose margins, the base concave, firmly attached below to the column-foot; **column** stout, 2 mm long, 3 mm broad, the anther and bilobed stigma apical, the base of the column broad, thick.

ECUADOR: **Morona-Santiago**: without collection data, collected by Ecuagenera, cultivated in Howell, MI, Feb, 2006, by *L. O'Shaughnessy 03047* (Holotype: MO), C. Luer illustr. 21004.

Among the species related to *Acronia cardiostola* in *Acronia* section *Macrophyllae-Fasciculatae*, this species is superficially similar to the preceding species. The non-resupinate, prominently purple-striped flower rests at the base of a horizontal or descending, rigidly coriaceous, dark green leaf. The middle sepal is round while the uppermost synsepal is scaphoid. The lip is thickly ovoid and concave centrally with broad margins, appearing very similar to the warty lip of *Acronia phymatodea* (Luer) Luer.

Acronia tobarii Luer & Hirtz, sp. nov. Fig. 4.

Ety.: Named for Francisco Tobar of Mindo, co-collector of this species.

Species haec *Acroniae cardiostolae* (Rchb.f.) Luer affinis, sed cauliorum vaginis hispidis foliis gracilioribus et labello oblongo obtuso differt.

Plant large, epiphytic, caespitose; roots slender. Ramicauls slender, erect, 25-28 cm long, with a close, hispidous, tubular sheath below the middle and 2-3 shorter but similarly hispidous sheaths at the base. **Leaf** spreading, more or less horizontal, coriaceous, narrowly ovate, 12-14 cm long, 2 cm wide in the dry state, the apex acuminate, acute, the base sessile, deeply cordate with the lobes up to 1 cm deep. **Inflorescence** a single, successive flower borne from a suberect, conduplicate spathe, 2 cm long, 6 mm broad, at the base of the leaf; peduncles 1-2 mm long, confined within the spathe with the floral bracts, floral bracts ca. 15 mm long; pedicels 20 mm long; ovary 8-10 mm long, cellular-glandular; flowers resupinate or non-resupinate; **sepals** minutely pubescent externally, cellular-papillose within, the middle sepal ovate to broadly ovate, subacute to obtuse, more or less convex, 12 mm long, 8-11 mm wide, 5-7 veined, the lateral sepals olive, connate into a narrowly ovate, acute synsepal, with more or less recurved

sides, 14-15 mm long, 6 mm wide expanded, 8-veined; **petals** dark red-brown, cellular-papillose, with ciliate-denticulate margins, elliptical-ovate, acute, narrowed below the middle, 11 mm long, 3.5-5.5 mm wide, 3-veined; **lip** glabrous, olive-brown, oblong, thick, the apex and basal angles obtuse, 4.5-5.5 mm long, 3 mm wide, the disc slightly cleft toward the apex, the base concave, with a short, thick, claw, firmly hinged to the column-foot; **column** stout, 1 mm long, 2.5 mm broad, the anther and bilobed stigma apical, the foot rudimentary.

ECUADOR: **Morona-Santiago**: new road between Guamote and Macas, alt. 2800 m, 14 Oct. 2004, *A. Hirtz, E. Sánchez, F. Tobar & W. Bautz 9090* (Holotype: MO), C. Luer illustr. 20921.

Pubescent or hispidous sheaths of the ramicauls are apparently isolated and rare occurrences in *Acronia* section *Macrophyllae-Fasciculatae*. The only other members of the genus known to have such sheaths are *A. crateriformis* (C. Schweinf.) Luer and *A. muriculata* (Luer & Hirtz) Luer. With the conspicuous spathe, *A. tobarii* is apparently related to species similar to *A. lilijae* (Foldats) Luer, and not closely allied to either of the above.

Arthrosia Luer, stat. et gen. nov.

Bas.: *Pleurothallis* subgen. *Arthrosia* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 20: 34, 1986.
Type: *Pleurothallis auriculata* Lindl., Comp. Bot. Mag. 2: 356, 1936.

Arthrosia auriculata (Lindl.) Luer, comb. nov.

Bas.: *Pleurothallis auriculata* Lindl., Companion Bot. Mag. 3: 356, 1836.

Arthrosia barbacenensis (Barb.Rodr.) Luer, comb. nov.

Bas.: *Pleurothallis barbacenensis* Barb.Rodr., Gen. Sp. Orch. Nov. 2: 11, 1882.

Arthrosia caldensis (Hoehne & Schltr.) Luer, comb. nov.

Bas.: *Pleurothallis caldensis* Hoehne & Schltr., Archiv. Bot. Estad. São Paulo 1(3): 210, 1926.

Arthrosia duartei (Hoehne) Luer, comb. nov.

Bas.: *Pleurothallis duartei* Hoehne, Archiv. Inst. Biol. São Paulo 2: 12, 1929.

Arthrosia floribunda (Lindl.) Luer, comb. nov.

Bas.: *Specklinia floribunda* Lindl., Gen. Sp. Orch. Pl. 9, 1830.

Arthrosia freyi Luer, sp. nov. Fig. 5.

Ety.: Named for Michel Frey who cultivates this species at Fazenda Capijuma in Espirito Santo.

Species haec *Arthrosiae floribundae* (LIndl.) Luer afffinis, sed floribus majoribus, racemo erecto, petalis duplo latioribus, et labelli callis duobus longioribus sub apicem ad basim differt.

Plant medium in size, epiphytic, caespitose, roots slender. Ramicauls slender, indistinctly triquetrous above the middle, erect, 14-18 cm long, enclosed by a closely fitting, tubular sheath on the middle third and 1-2 sheaths at the base. **Leaf** erect, coriaceous, narrowly elliptical, subacute to acute, 5.5 cm long, 0.9-1 cm wide, narrowly cuneate below at the sessile base. **Inflorescence** an erect, subcongested, distichous, several-flowered raceme, 10-13 cm long including the peduncle 6-7 cm long, borne from the base of the leaf with a spathe 5-6 mm long; floral bracts 2 mm long; pedicel 1 mm long; ovary 3.5 mm long; **sepals** orangy-tan, glabrous, carinate, the dorsal sepal elliptical, subacute, 8 mm long, 3 mm wide, 3-veined, the lateral sepals connate to near the apex into an ovate, shallowly concave lamina, with the apex shortly bifid with acute tips, 8 mm long, 4.5 mm wide expanded, 6-veined; **petals** translucent, elliptical, obtuse, with slightly irregular margins, 3.5 mm long, 2.2 mm wide, with a single, dark purple vein; **lip** purple, elliptical-trilobed, 4 mm long, 2 mm wide expanded, rounded at the apex, with slightly irregular margins, the lobes above the middle, erect, antrorse, acute, the disc with a pair of longitudinal calli from below the apical margin to the callus at the base, the base with a thick, wedge-shaped callus that articulates with a cavity at the tip of the column-foot; **column** stout, longitudinally winged, 3.5 mm long, denticulate at the apex, the hooded anther, rostellum and stigma ventral, the foot thick, 2 mm long.

BRAZIL: **Espirito Santo**: forest near Fazenda Capijuma, alt. ca. 1200 m, where it was collected and cultivated, flowered in cultivation, 23 Nov. 2002, by *Michel Frey 057* (Holotype: HB), C. Luer illustr. 20252.

This species from Espirito Santo in southeastern Brazil is related to the widely distributed *Arthrosia floribunda* (Lindl.) Luer, but it is distinguished from the latter by larger flowers that are held upright in a longer, strict raceme. The sepals are a third larger, the petals are twice as broad, and the calli on the disc of the larger lip extend from near the apex to the base.

Arthrosia hygrophila (Barb.Rodr.) Luer, comb. nov.
Bas.: *Pleurothallis hygrophila* Barb.Rodr., Gen. Sp. Orch. Nov. 1: 7, 1877.

Arthrosia malachantha (Rchb.f.) Luer, comb. nov.
Bas.: *Pleurothallis malachantha* Rchb.f., Bonplandia 3: 228, 1855.

Arthrosia muscosa (Barb.Rodr.) Luer, comb. nov.
Bas.: *Pleurothallis muscosa* Barb.Rodr., Gen. Sp. Orch. Nov. 1: 7, 1877.

Arthrosia myrticola (Barb.Rodr.) Luer, comb. nov.
Bas.: *Pleurothallis myrticola* Barb.Rodr., Gen. Sp. Orch. Nov. 1: 9, 1877.

Arthrosia purpureo-violacea (Cogn.) Luer, comb. nov.
Bas.: *Pleurothallis purpureo-violacea* Cogn., Fl. Bras. 3(4): 405, 1896.

The following two combinations need to be made because of their omissions from a previous *Icones Pleurothallidinarum*.

Colombiana cosmetron (Luer) Luer, comb. nov.
Bas.: *Pleurothallis cosmetron* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 44: 120, 1992.

Colombiana silverstonei (Luer) Luer, comb. nov.
Bas.: *Pleurothallis silverstonei* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 44: 122, 1992.

Crocodeilanthe suinii Luer, sp. nov. Fig. 6.
Ety.: Named for Linder Suin of Gima, Ecuador, who collected and cultivated this species.

Species haec **Crocodeilanthis salpinganthae** (Luer & Hirtz) Luer affinis, sed sepalis profundissime connatis ad apicem valde incrassatis, et labello suborbiculare cum calli supra medium indistinctis differt.

Plant medium in size, epiphytic, densely caespitose; roots slender. Ramicauls fasciculate, stout, erect, 8-12 cm long, with a loose, tubular sheath on the middle third and 2-3 loose, imbricating sheaths about the base. **Leaf** erect, coriaceous, elliptical, subacute to obtuse, 7-8 cm long, 2-2.3 cm wide, cuneate below into a petiole 1-1.5 cm long. **Inflorescence** an erect, congested, many-flowered raceme, more or less secund, most flowers open simultaneously, 5-9 cm long including the peduncle 3-4 cm long, within an oblique spathe 2-3 cm long, from an annulus ca. 2 mm below the abscission layer; floral bracts tubular, inflated, 6 mm long, enclosing the pedicel, ovary and lower half of the flower; pedicels 2 mm long; ovary 1.5 mm long; **sepals** yellow, microscopically pubescent above the middle, the dorsal sepal oblong, longitudinally concave, the apical quarter thick and obtuse, 8 mm long, 3 mm wide expanded, 3-veined, connate to the lateral sepals for 6 mm to form a cylindrical sepaline tube that is constricted below the apical thickenings, the lateral sepals oblong, connate 5 mm, with the apices similarly thickened, 6.5 mm long, 3 mm wide together, 6-veined together; **petals** translucent yellow, broadly elliptical, rounded at the apex, 3 mm long, 3 mm wide, 3-veined; **lip** yellow, fleshy, suborbicular, 3 mm long, 3 mm wide expanded, the apex broadly rounded, the disc shallowly concave, with an obscure pair of low, oblique, lunate calli slightly above the middle, and with a transverse callus above the narrowly concave base, the base truncate, firmly hinged to the column-foot; **column** stout, 1 mm long, the foot thick, less than 1 mm long with the apex short and thick, the anther, rostellum and stigma subapical.

ECUADOR: **Azuay**: near Gima, alt. ca. 3000 m, collected and cultivated in Gima by Linder Suin, flowered in cultivation 6 Mar. 2001, *C. Luer 19769* (Holotype: MO).

This species of high altitudes of southern Ecuador is related to the relatively frequent and widely distributed *Crocodeilanthe salpingantha* (Luer & Hirtz) Luer. Both species are characterized by a long, foliaceous spathe, and large floral bracts that enclose a deeply connate, yellow, perianth tube. *Crocodeilanthe suinii* differs by the petiolate instead of sessile leaves, and sepals deeply connate into a tube that is constricted below thickened apices.

Dracula saulii Luer & Sijm, sp. nov. Fig. 7.
Ety.: Named for Saul Ruiz Pérez of Lima Peru, who collected this species.

Inter species generis *Draculae*, habitus parvus uniflorus, foliis anguste linearibus, sepalis ovatis obtusis albis dense spiculatis longicaudatis, labelli epichilio concavo dense muricato distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3.5-4 cm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, thinly coriaceous, carinate, narrowly linear, obtuse, 15-17 cm long including an indistinct petiole, 1 cm wide, narrowed below to the base. **Inflorescence** a single flower, borne by a horizontal peduncle, 10-11 cm long, from low on the ramicaul; floral bract tubular, 9-10 mm

long; pedicel 10-17 mm long; ovary thick, 4 mm long, round in cross section with the ribs microscopically erose; **sepals** white, suffused with brown within along the margin of the cup, suffused with purple externally, diffusely spiculate within, the dorsal sepal transversely ovate, 10 mm long, 13-15 mm wide, connate to the lateral sepals for 6 mm to form a broad, deep, sepaline cup, the apex rounded, abruptly contracted into a reflexed, slender, purplish tail 18-23 mm long, the lateral sepals broadly ovate, oblique, connate 10 mm into a 20-22 mm wide, broad lamina with a broad, rounded mentum, the apices broadly obtuse, contracted into slender, purplish tails 35-52 mm long; **petals** purple, cartilaginous, oblong, 2.5 mm long, 2 mm wide, the apex bivalvate, densely spiculate between the laminae, the inner lamina subacute, denticulate, the outer lamina rounded; **lip** white, thickly pandurate, 6 mm long, 4.25 mm wide, the epichile transversely reniform, concave, 3 mm long, 4.25 mm wide, filled with irregular, large to small spicules, asymmetrically arranged, the hypochile ovoid, minutely and sparsely spiculate 2.5 mm long, 3 mm wide, deeply cleft centrally, with thickened margins that continue into irregular, papilliform spiculate processes the overhang the epichile, the margins broadly rounded, the base decurved, concave, hinged to the column-foot; **column** white, stout, semiterete, 3 mm long, denticulate at the tip, with a stout foot 3 mm long.

PERU: collected by Saul Ruiz, obtained from Manuel Arias, cultivated at Orchideeënkwerkerij, Venhuizen, the Netherlands, flowered in cultivation, Oct. 2005, *Ton Sijm 250925* (Holotype: MO), C. Luer illust. 20980.

Among the species of *Dracula* Luer, this species is distinguished by its small size and narrowly linear, obtuse leaves one centimeter wide. The peduncle bears a single, cupped flower with obtuse, more or less recurved sepals. Within, the sepals are white and covered above the middle by a dense field of spicules. Most unusual is the tail of the dorsal sepal that is twice to thrice shorter than the tails of the lateral sepals. The purple petals seem to peek out like a pair of eyes. The lip is small but remarkable for the asymmetrically arranged, numerous, fleshy spicules of various sizes that fill the hypochile below a similarly asymmetrical, spiculate, overhanging margin of the hypochile.

Dryadella marilyniana Luer, sp. nov. Fig. 8.

Ety.: Named for Marilyn Lee who imported this species from Ecuagenera.

Inter species generis *Dryadellae* Luer, planta parva pedunculo abbreviato, foliis angustissine obovatia, sepalis ad apicem incrassatis, petalis acute angulatis, labelli lamina profunde fimbriata distinguitur.

Plant small, presumably epiphytic, densely caespitose; roots thick. Ramicauls erect, 8-9 mm long, enclosed by 2-3 thin, tubular sheaths. **Leaf** erect, thickly coriaceous, narrowly linear-obovate, acute to subacute, 3.5-4.5 cm long, 0.4 cm wide, gradually narrowed below into an indistinct petiole. **Inflorescence** a single flower, borne by an erect peduncle 1.5-2 mm long, enclosed by a membranous bract, from low on the ramicaul; floral bracts thin, 2.5-3 mm long; pedicel 2 mm long; ovary thickly carinate, 1 mm long; **sepals** fleshy, especially toward the apices, microscopically erose, the dorsal sepal ovate, pale rose, heavily marked with purple spots and transverse bars, subacute, concave, 8.5 mm long, 4 mm wide expanded, connate to the lateral sepals for 3 mm to form a sepaline cup, the lateral sepals rose-purple, ovate, oblique, acute, 7 mm long, 4 mm wide, with a transverse callus above the decurved base, connate 2 mm at the base to form a small chin; **petals** translucent rose, diffusely dotted with purple, oblong-spathulate, obtuse, with acute marginal angles above the middle, 4 mm long, 1.8 mm wide, 3 mm wide across the angled margins; **lip** rose-purple, long-unguiculate, the blade obovate, rounded at the deflexed apex, the margins deeply fimbriate, 2.5 mm long, 2 mm wide, the base above the claw with a pair of acute, retrorse lobes, the disc with a pair of erect, finlike, fimbriate lamellae, the claw farinose, 1 mm long, bilobulate at the base, hinged to the apex of the column-foot; **column** rose, 3 mm long, longitudinally winged from below the middle, the foot equally long.

ECUADOR: without locality, collected by Ecuagenera, purchased by Marilyn Lee, a part given to and flowered in Howell, MI, March 2006, by *Lynn O'Shaughnessy 03233* (Holotype: MO), C. Luer illustr. 21005.

This colorful little species appears very much like many other tailless species of the genus, but it is easily distinguished by a deeply fringed lip. Except for the bright colors and fringed lip, it is most similar to *Dryadella aurea* Luer & Hirtz. The only other known species with anything like a fringed lip is the long-tailed *D. crenulata* (Pabst) Luer from Brazil, but the margin of the lip of this species is only denticulate.

Restrepia persicina Luer & Hirtz, sp. nov. Fig. 14.

Ety.: From the Latin *percicinus*, "peach-colored," referring to the color of the synsepal.

Species haec *Restrepiae cupreae* Luer & R.Escobar similis, sed flore majore, synsepalo persicino et labello grande plano pyriformi distinguitur.

Plant medium in size or large, epiphytic, caespitose; roots slender. Ramicauls erect, 8-9 cm long, enclosed by 7-8 thin, whitish, loose, obliquely acute, compressed, more or less imbricating, intensely dark-spotted sheaths. **Leaf** erect, coriaceous, elliptical-ovate, acute, 6-7 cm long, 3-3.5 cm wide, the base broadly cuneate or rounded, contracted into a twisted petiole ca. 0.5 cm long. **Inflorescence** a solitary flower, produced successively in a fascicle up the back side of the leaf; peduncle slender, 4-5 cm long; floral bract thin, tubular, acute, 6 mm long; pedicel stout, 2 mm long, with a filament 3 mm long; ovary 5 mm long; **sepals** membranous, the dorsal sepal free, erect, translucent rose with the midvein purple, narrowly ovate below the middle, attenuated above the middle with the apex clavate-thickened, 40 mm long, 3 mm wide at the base, 5-veined, the lateral sepals connate to near the apex into a shallowly concave, elliptical-obovate, shortly bifid lamina, the tips acute, appearing solid light yellow-orange, but the longitudinal veins are slightly darker and coalescing, the margins narrowly yellow-white, 42 mm long, 16 mm wide expanded, 14-veined; **petals** membranous, translucent white, with the midvein and margins purple, narrowly linear-triangular, attenuated above the middle with the apex clavate-thickened, 20 mm long, 1.3 mm wide at the base; **lip** yellow-orange with a broad, darker stripe down the center, pyriform, 4 mm wide at the middle, 12 mm long, the epichile broadly ovate, flat, 6 mm wide, truncate-bilobed at the apex, cellular-papular, the hypochile subquadrate, concave with thin, erect margins, each side with a small, capillary, uncinate process, the disc with a pair of low carinae extending forward a short distance from the base of each process, the base subtruncate, connected to the column-foot by a rigid, cylindrical neck; **column** rose-white, slender, clavate, 5 mm long, the base pedestal-like, with a pair of obtuse calli.

ECUADOR: **Zamora-Chinchipe**: near Zumba, alt. 1500 m, collected and flowered in cultivation by Ecuagenera, Qualaceo, 27 July 2004, *A. Hirtz 8915* (Holotype: MO), C. Luer illustr. 20983.

This large-flowered species is most similar to *Restrepia cuprea* Luer & R.Escobar of the Central Cordillera of Colombia. Vegetatively, it is similar to many species, including those with darkly spotted cauline sheaths. The flower, borne by a peduncle about half the length of the leaf, is basically similar to those of Section *Restrepia*. The synsepal is four centimeter long, and solidly colored pale yellow-orange with even paler margins. The longitudinal veins are slightly darker as stripes with the color coalescent between, as seen in the solid copper color of *R. cuprea.* The pyriform lip is similarly peach-colored with a darker, central stripe.

Trichosalpinx jostii Luer & Dalström, sp. nov. Fig. 15.

Ety.: Named for Cerro Sipapoa, the tepui where it was collected.

Species haec *Trichosalpingis lamellatae* Luer similis, sed planta minore, pedicellis longioribus et labello membranaceo obovato subtrilobato sine lamella differt.

Plant very small, epiphytic, caespitose; roots slender. Ramicauls erect, slender 12-19 mm long, enclosed by 4 microscopically ciliate, lepanthiform sheaths. **Leaf** erect, thickly coriaceous, narrowly elliptical, acute, 7-8 mm long, 3-3.5 mm wide, contracted below into a petiole less than 1 mm long. **Inflorescence** a loose, distichous, flexuous, simultaneously 5- to 6-flowered raceme, to 2 cm long, including the filiform peduncle 0.5 cm long, from near the apex of the ramicaul; floral bracts 1 mm long; pedicels 3-5 mm long; ovary 0.5 mm long; **sepals** pale yellow, glabrous, membranous, subcarinate, the dorsal sepal ovate and concave below the middle, acute, 5.5 mm long, 2.3 mm wide expanded, 3-veined, the lateral sepals narrowly triangular, 5 mm long, 0.1.6 mm wide together, each 1-veined, connate 3 mm; **petals** translucent, elliptical-obovate, obtuse, oblique, 2.75 mm long, 0.9 mm wide, 1-veined; **lip** yellow, ovate-trilobed, 3.25 mm long, 1.5 mm wide across the lobes, the apical lobe suboblong, round and cellular at the apex, the lateral lobes below the middle, erect, broadly obtuse, the disc shallowly channeled toward the truncate base, hinged to the column-foot; **column** terete, 1.5 mm long, the anther subapical, the stigma ventral, the foot nearly 1 mm long.

ECUADOR: **Pastaza**: along Río Anzu, alt. 1450 m, 23 December 2002, *S. Dalström & L. Jost 2751* (Holotype: MO).

This tiny species is another of several others of the genus that are related to the frequent, widely distributed, and variable *Trichosalpinx intricata* (Lindl.) Luer. Of these, it is most similar to *T. lamellata* Luer, but it is smaller vegetatively, and with a lip completely devoid of any callus.

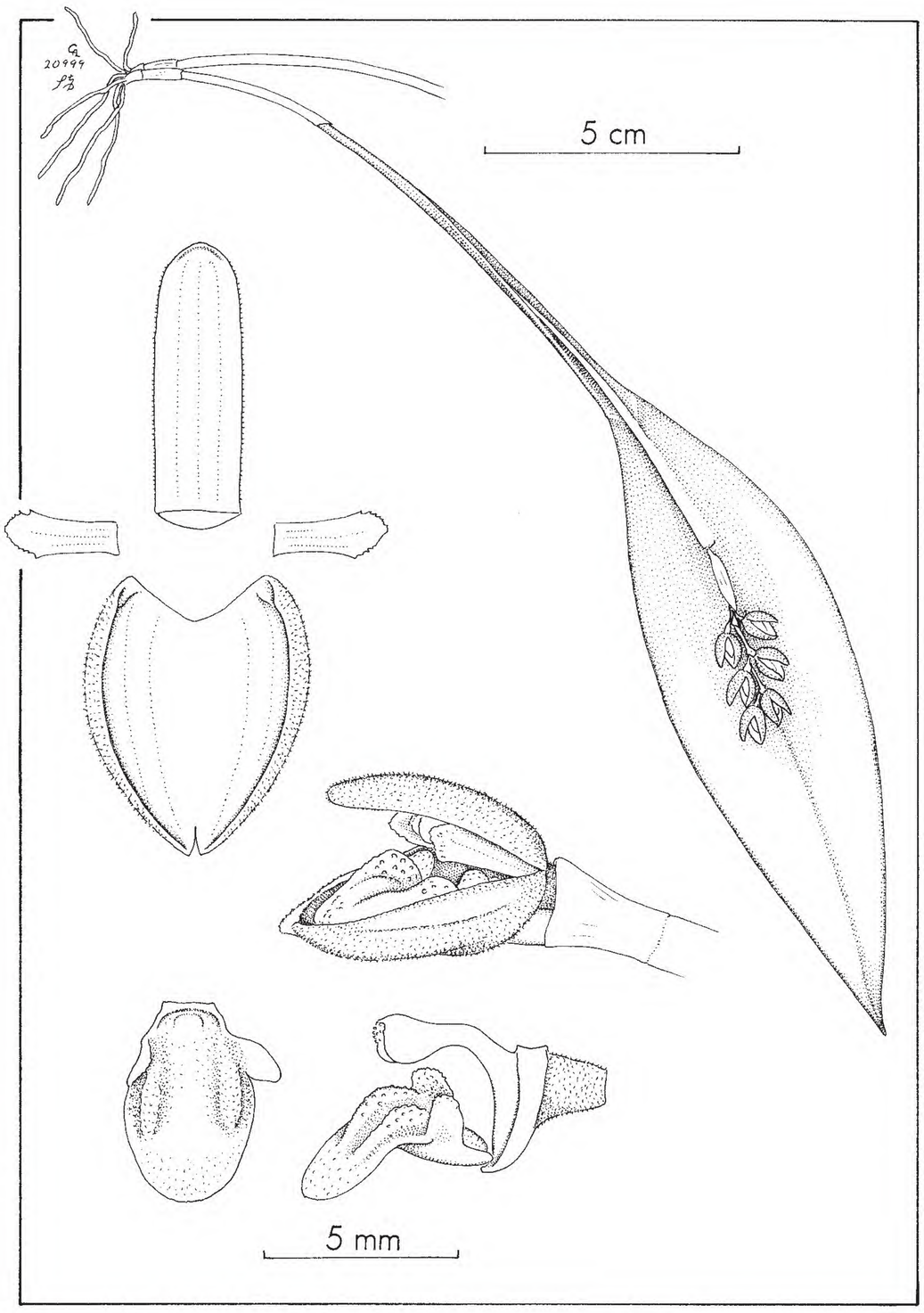


Fig. 1. Acianthera rinkei

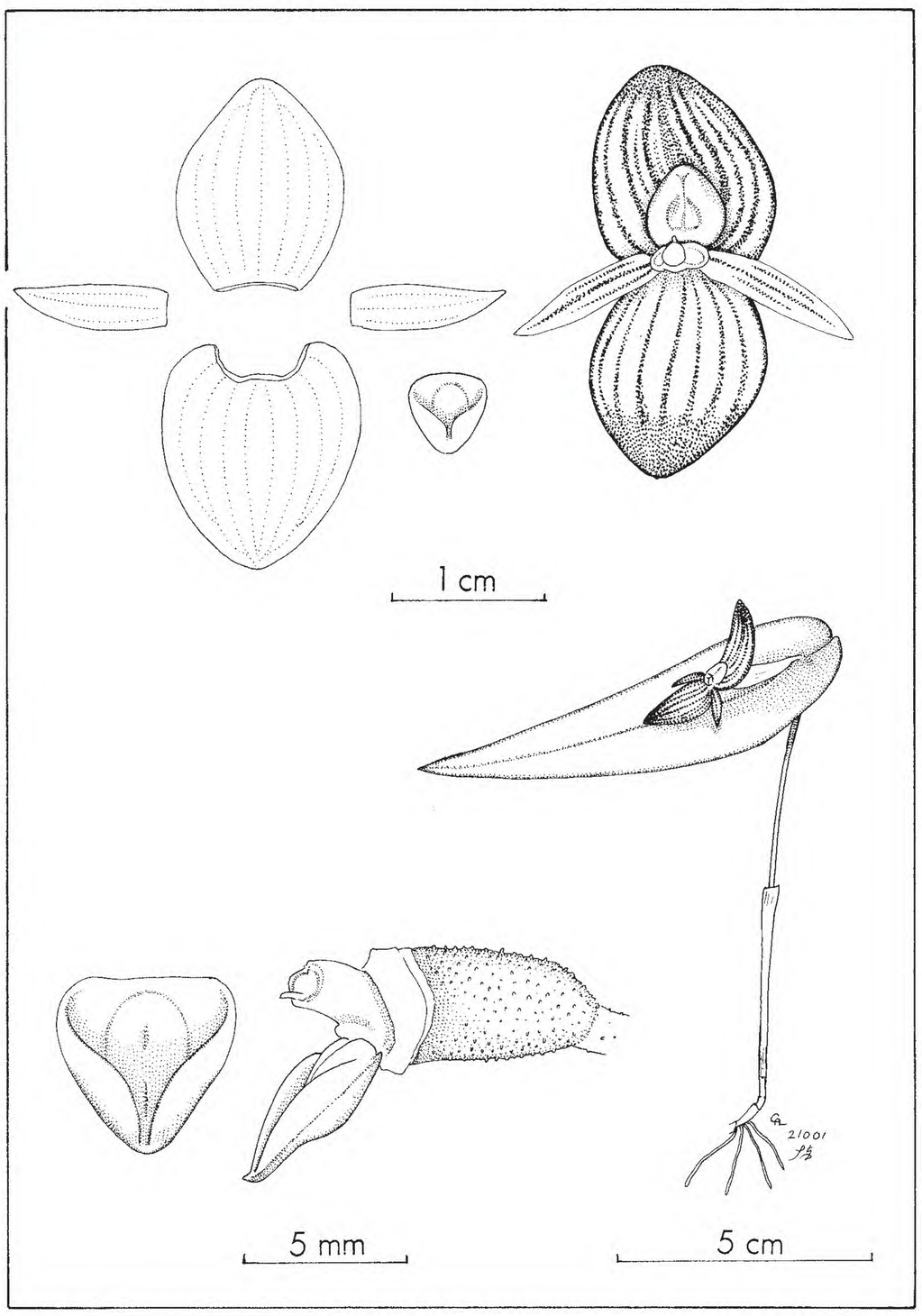


Fig. 2. Acronia lynniana

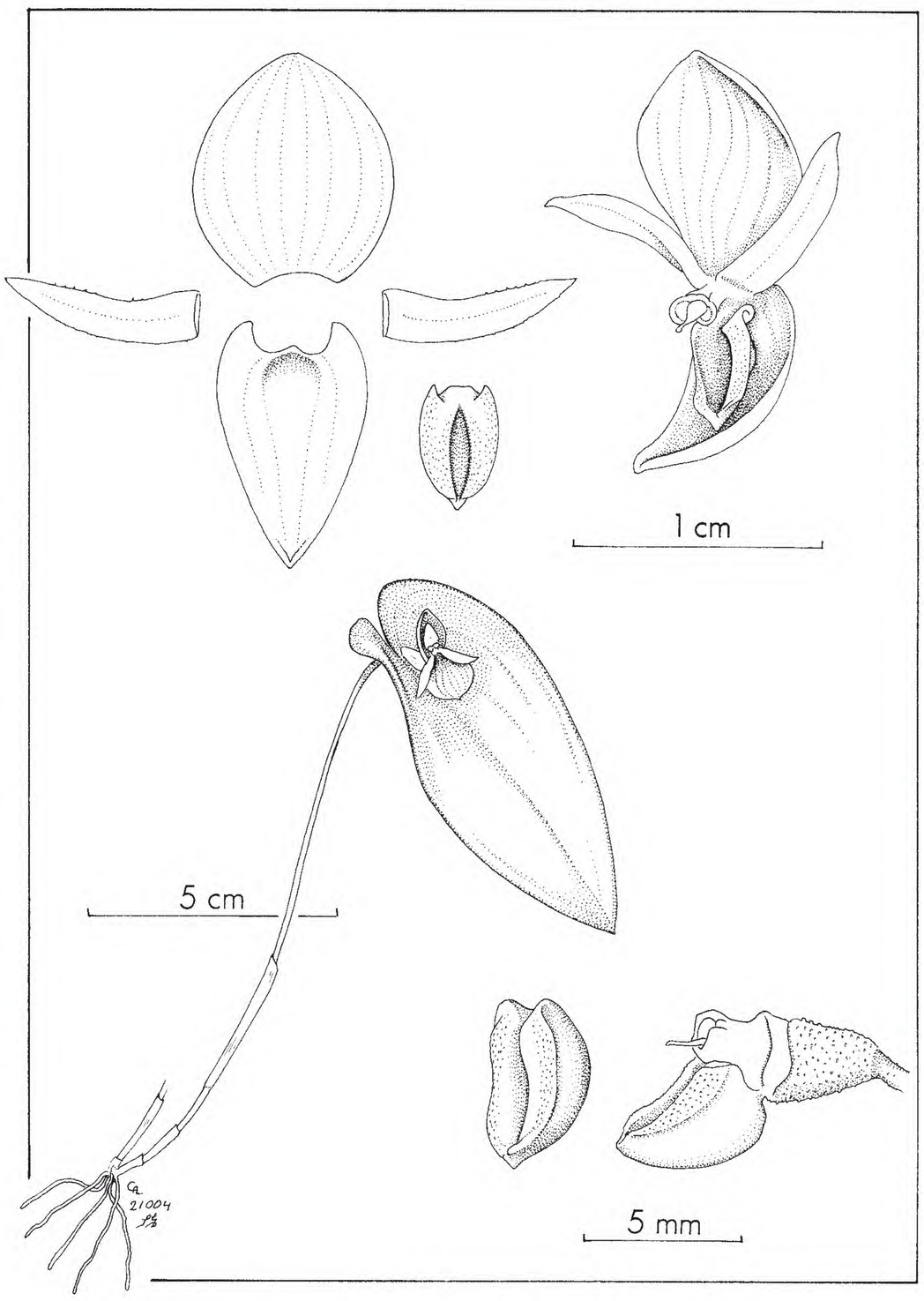


Fig. 3. Acronia pyelophera

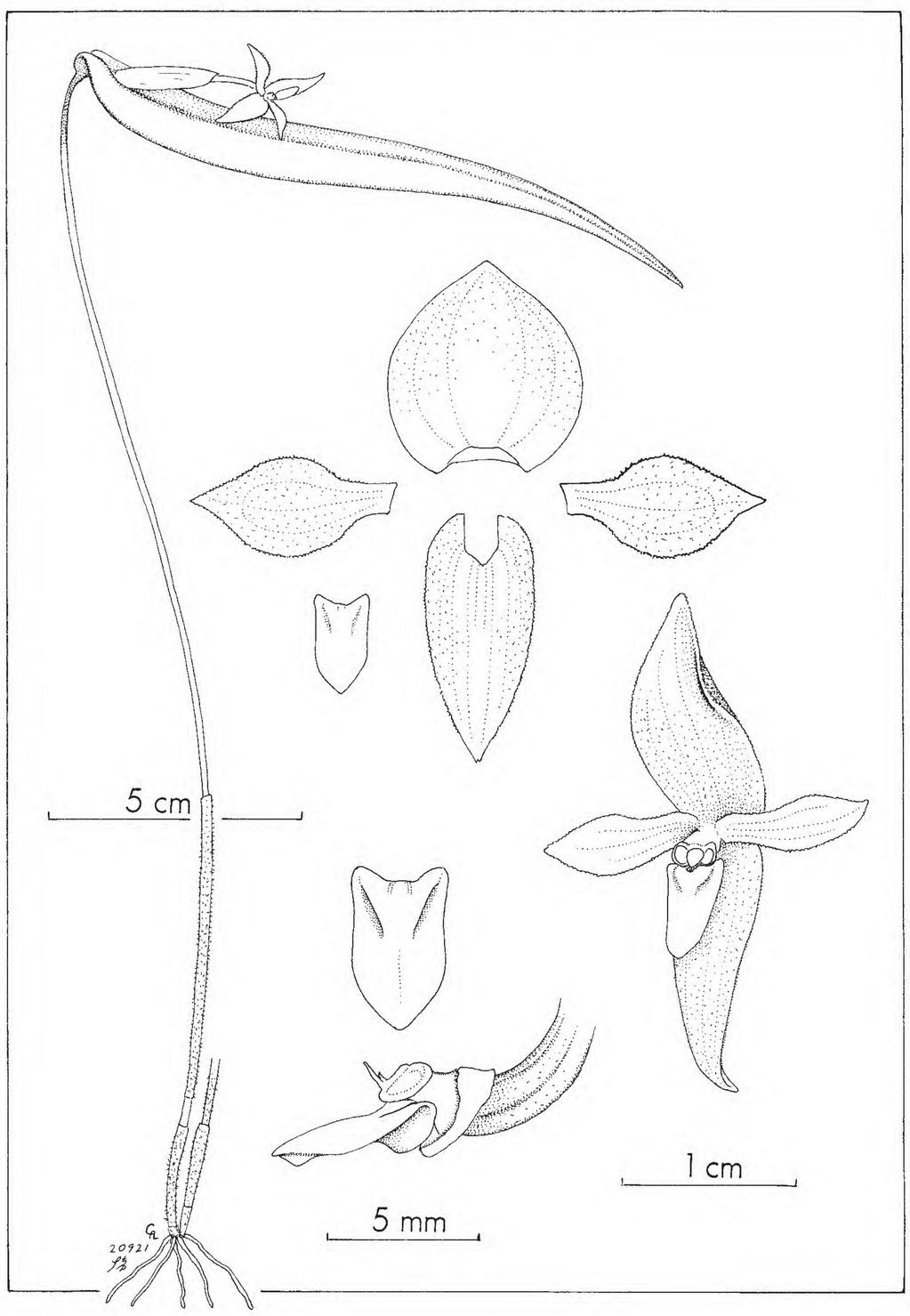


Fig. 4. Acronia tobarii

ECUADOR: **Imbabura**: Province of Cotacachi, Junín, alt. 1500-1700 m, 16 Feb. 2004, *F. Tobar & J. Monge 612* (Holotype: MO), C. Luer illustr. 20973.

All known members of the genus *Platystele* Schltr. possess only single-veined sepals, except for this present species with a three-veined dorsal sepal. The peculiar lip of this species is reminiscent to that of *P. fimbriata* Luer & Hirtz, *P. resimula* Luer & Hirtz, and *P. rhinocera* Luer & Hirtz, all known by a prominent convexity of the apex. The convexity of *P. tobarii* is largest near the middle.

Porroglossum marniae Luer, sp. nov. Fig. 11.

Ety.: Named for Marni Turkel of Santa Rosa, CA, who collected this species.

Species haec *Porroglosso nutibarae* Luer & R.Escobar similis, sed sepalo dorsali cauda breva a dimidium laminae attingenti et labelli callo multihumiliore differt; a *P. olivaceo* H.R.Sweet sepalorum lateralium caudis multicrassioribus et labelli callo etiam multihumiliore differt.

Plant medium in size for the genus, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 1 cm long, enclosed by 2 tubular sheaths. **Leaf** erect, coriaceous, petiolate, 5-8 cm long including the petiole 3-4 cm long, the blade narrowly elliptical, subacute, 1 cm wide, gradually narrowed below into the slender petiole. **Inflorescence** a successively several-flowered, congested fascicle, borne at the apex of a slender, erect, glabrous peduncle to 25 cm long, with a few widely spaced bracts, from low on the ramicaul; floral bracts tubular, imbricating, 4-5 mm long; pedicels 7-8 mm long; ovary smooth, 3 mm long; **sepals** translucent white, glabrous, the dorsal sepal transversely obovate-bilobed, 4 mm long, 9 mm wide expanded, 3-veined, connate to the lateral sepals for 2.5 mm to form a gaping cup, the apex retuse, acutely reflexed, abruptly short-caudate, the tail 2 mm long, the lateral sepals oblong, oblique, 6 mm long, 4 mm wide, connate 2 mm to form an obtuse mentum below the tip of the column-foot, the apices oblique, obtuse, contracted into white, descending, thickened, subclavate tails 12 mm long, 1 mm thick; **petals** translucent white, oblong-ovate, 4 mm long, 2 mm wide, narrowed to the slightly dilated, rounded apex, the margins with obtuse angles below the middle; **lip** with the blade dark purple, white at the base, obovate, 4 mm long, 3.5 mm wide, microscopically pubescent above the middle, the apex broadly obtuse, with a short, narrowly sulcate cavity within the apex, the base with a low, longitudinal, brownish callus, deflexed below into a slender, straplike claw bent with tension about the free apex of the column-foot; **column** semiterete, 2 mm long, the slender foot 4.5 mm long.

ECUADOR: **Imbabura** Selva Alegre, alt. 2050 m, collected 14 May 1983 by Marni Turkel, flowered in cultivation by Marni Turkel, 3 June 2002, *C. Luer 20140* (Holotype: MO), C. Luer

This species, collected in flower by Marni Turkel in northcentral Ecuador, has morphological features that place it between the Colombian *Porroglossum nutibara* Luer & R.Escobar and the Ecuadorian *P. olivaceum* H.R.Sweet. It differs from the former by a short, but distinct tail of the dorsal sepal similar to that of *P. olivaceum*, and the tails of the lateral sepals are thickened and subclavate also similar to those of *P. olivaceum*. From *P. olivaceum*, it differs in translucent white sepals, and thick instead of slender tails of the lateral sepals. The appearance of the flower is more like *P. nutibara* than *P. olivaceum*. From both of them, it differs with a low, longitudinal callus of the lip.

Porroglossum parsonsii Luer, sp. nov. Fig. 12.

Ety.: Ronald L. Parsons, Jr., of Daly City, California, who cultivates this species.

Species haec *Porroglosso echidno* (Rchb.f.) Garay affinis, sed sepalorum lateralium caudis late expansis brevioribus, synsepali mento compresso acuto profunde concavo differt.

Plant medium in size for the genus, presumably epiphytic, caespitose; roots thickly fleshy. Ramicauls erect, stout, 10-12 mm long, enclosed by a tubular sheath and another at the base. **Leaf** erect, thickly coriaceous, petiolate, 6 cm long including the petiole 1 mm long, the blade elliptical, obtuse, 1.5 cm wide, narrowed below into the petiole. **Inflorescence** a successively flowered, congested raceme, borne at the apex of an erect, densely pubescent peduncle to 12 cm long, with a bract about midway from the base, from low on the ramicaul; floral bracts tubular, imbricating, 5-6 mm long; pedicels 7 mm long;

ovary densely short-spiculate, 5 mm long; **sepals** verrucose and tan with purple veins externally, glabrous and purple-brown within, the dorsal sepal obovate, 7 mm long, 6 mm wide expanded, 3-veined, connate to the lateral sepals for 4 mm to form a compressed cup, the apex obtuse, contracted into an erect, cylindrical tail 1 mm thick, that is narrowest in the lower quarter, ca. 14 mm long, the lateral sepals transversely oblong, oblique, 10 mm long, 5 mm wide, connate 6 mm to form an acute, deeply concave mentum below the free extension of the column-foot, the apices oblique, acuminate, contracted into widely expanded tails 14 mm long, similar to that of the dorsal sepal, all tails orange, suffused with dark purple; **petals** translucent, subovate, 5 mm long, 2 mm wide below the middle, narrowed above an obtuse angle on the lower margin, the tip rounded; **lip** dark purple, the blade cuneate, 4 mm long, 2 mm wide near the truncate apex, long-fimbriate at the apex, with a narrowly sulcate cavity within the apex, the the lower two-thirds of the blade filled with an erect, compressed, rounded, subverrucose callus, the base extended into a slender, straplike claw bent with tension about the free apex of the column-foot; **column** semiterete, 2 mm long, the slender foot 4 mm long.

COLOMBIA: without collection data, obtained from a Colombian collector, in 2004, flowered in cultivation by Ron Parsons in Daly City, California, April 2006, Turkel, *C. Luer 20985* (Holotype: MO).

This Colombian species is closely allied to *Porroglossum echidnum* (Rchb.f.) Garay, a well-known species from the Eastern Cordillera of Colombia. Both species are characterized by rigid, subverrucose leaves, and a longer peduncle, covered by a dense, long pubescence, that bears a successively flowered raceme. Instead of brown or green, the sepals of *P. parsonsii* are tan externally with purple veins, and deep purple-brown within. Instead of more or less rounded, the sepaline cup of *P. parsonsii* is compressed, and with a deep, acute mentum. Instead of curving downward, the somewhat shorter and narrower sepaline tails of *P. parsonsii* expand widely and curve more or less upward.

Porroglossum sijmii Luer, sp. nov. Fig. 13.

Ety.: Named for Antonius P. Sijm of Elbaweg, the Netherlands, who collected this species.

Species haec *Porroglosso condylosepalo* Sweet affinis, sed flore majore, ovario non torto, sepalo dorsali obtuso ecaudato, et labelli callo biconico erecto differt.

Plant medium in size for the genus, epiphytic, caespitose; roots slender. Ramicauls erect, 8-10 mm long, enclosed by 2-3 tubular sheaths. **Leaf** erect, coriaceous, faintly rugose, petiolate, 3-4 cm long including the petiole ca. 1.5 cm long, the blade elliptical, subacute, 10-12 mm wide, cuneate below into the petiole. **Inflorescence** a successively few-flowered raceme, the flowers resupinate, borne by an erect, smooth, slender peduncle 8-9.5 cm long, with a bract below the middle, from low on the ramicaul; floral bracts tubular, imbricating, 5 mm long; pedicel 5 mm long; ovary not twisted, 3-4 mm long; **sepals** purple, glabrous, the middle sepal obovate, concave, 9 mm long, 4.25 mm wide unexpanded, connate to the lateral sepals for 4 mm, the apex thick, obtuse, minutely verrucose, the lateral sepals oblong-ovate, 9 mm long, 8 mm wide, connate to each other 4 mm behind the free apex of the column-foot, the broadly obtuse apices contracted into thick tails ca. 3 mm long and 2 mm wide; **petals** oblong, 4.5 mm long, 2 mm wide, with acute marginal angles on both margins, the apex thickened; **lip** glabrous, the blade thick, triangular, truncate, 5 mm long, 3 mm wide, the lateral angles obtuse, the apex transverse with a short, obtuse, sulcate apiculum, the base with an erect, biconical callus, the blade deflexed at the base into a straplike claw bent with tension around the free apex of the column-foot; **column** stout, semiterete, 2.5 mm long, the foot 4 mm long, the stigma with a pair of pointed processes.

ECUADOR: **Zamora-Chinchipe**: near Yangana, alt. ca. 2500 m, 30 Aug. 2004, *T. Sijm, A. Sijm, et al. 240915* (Holotype: MO), C. Luer illustr. 201010.

This species is most similar to *Porroglossum condylosepalum* Sweet, both species occurring on the eastern slopes of Ecuador, but *P. sijmii* is found in the southernmost part while *P. condylosepalum* occurs in central Ecuador. *Porroglossum sijmii*, differs with a larger flower borne on a non-twisted ovary. The dorsal sepal of *P. sijmii* terminates in a thick, verrucose apex, instead of a short, thick tail. The tails of the lateral sepals are similar. The lip also differs from that of *P. condylosepalum* with a tall, erect callus at the base of the blade.

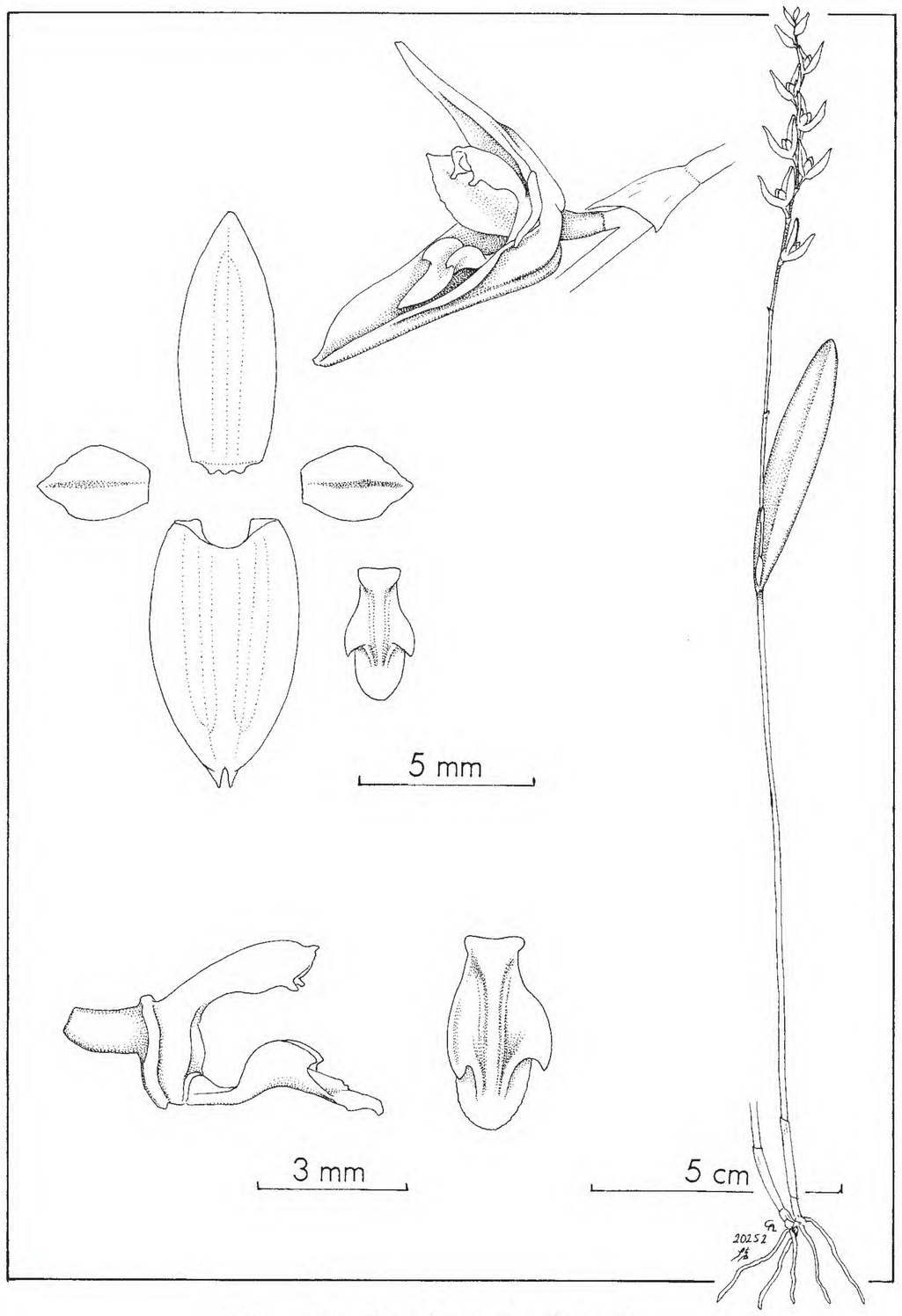


Fig. 5. Arthrosia freyi

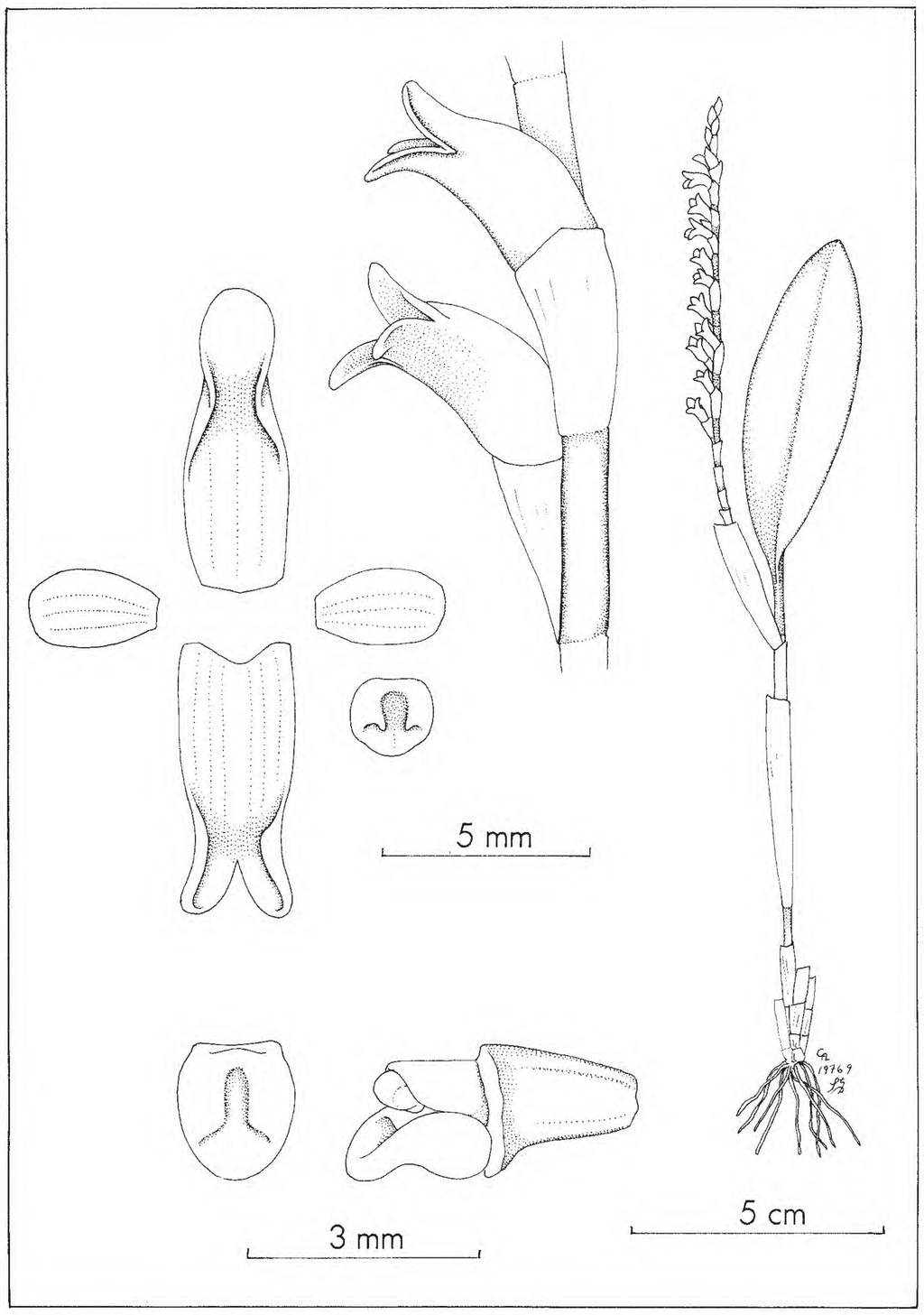


Fig. 6. Crocodeilanthe suinii

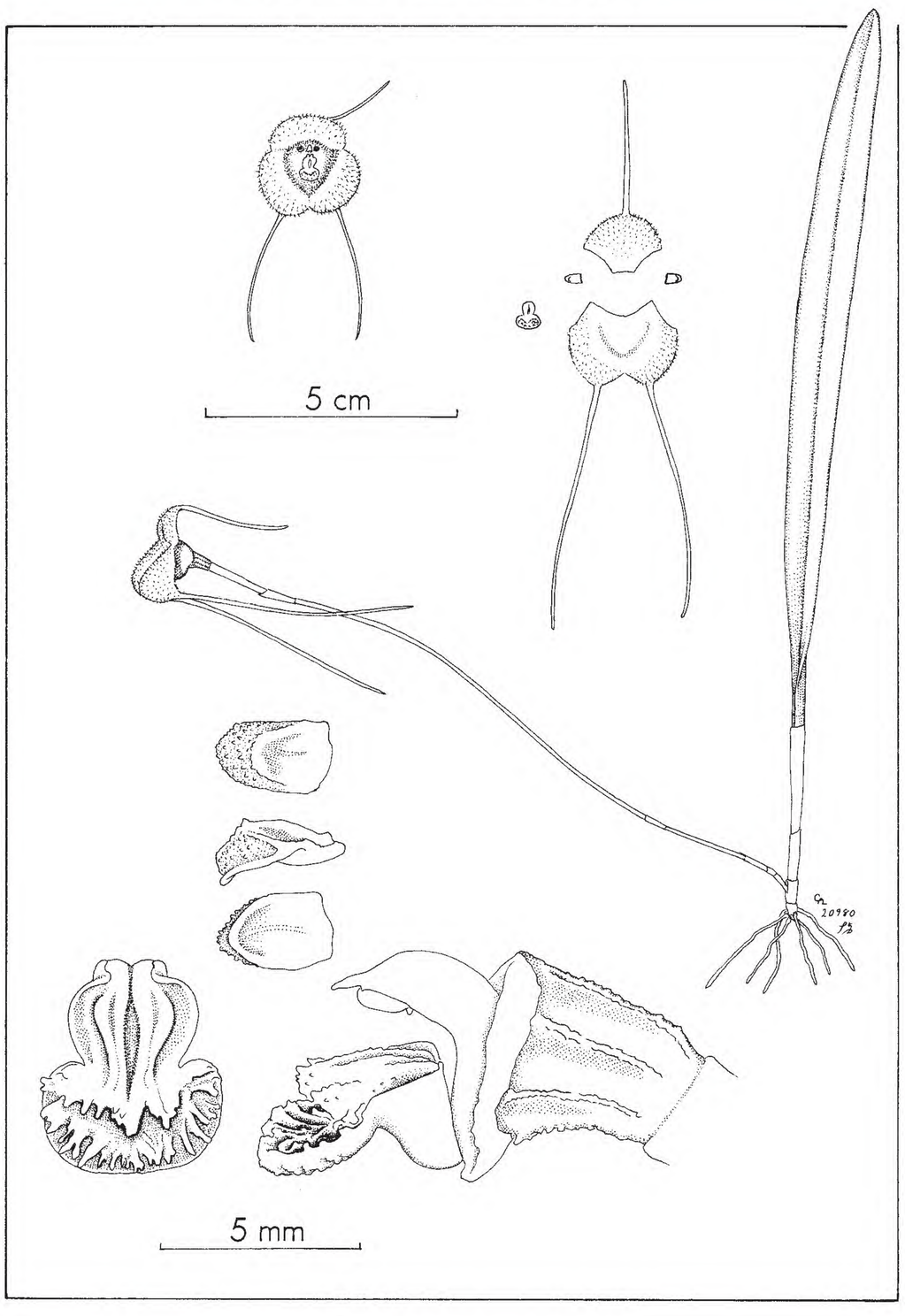


Fig. 7. Dracula saulii

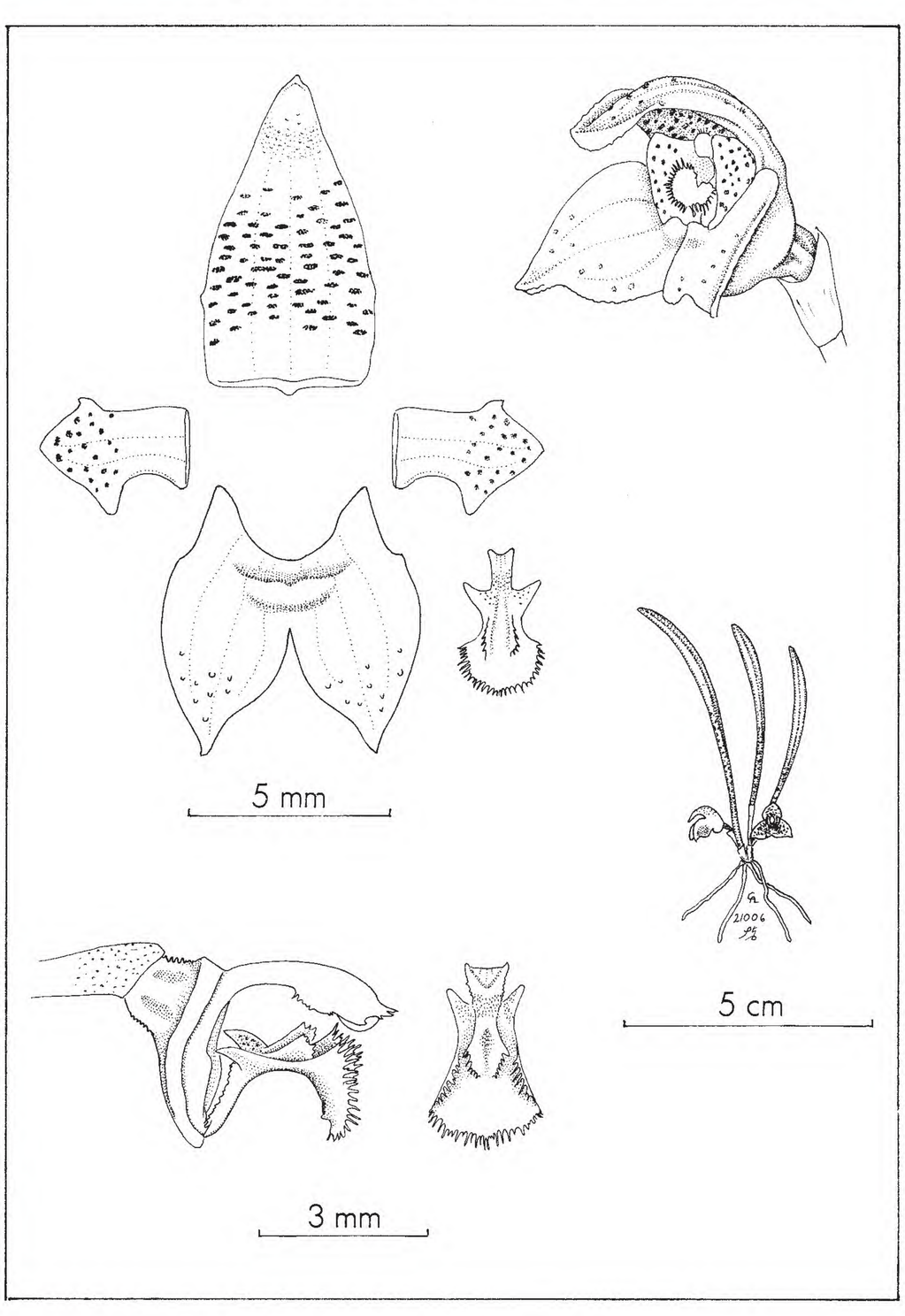


Fig. 8. Dryadella marilyniana

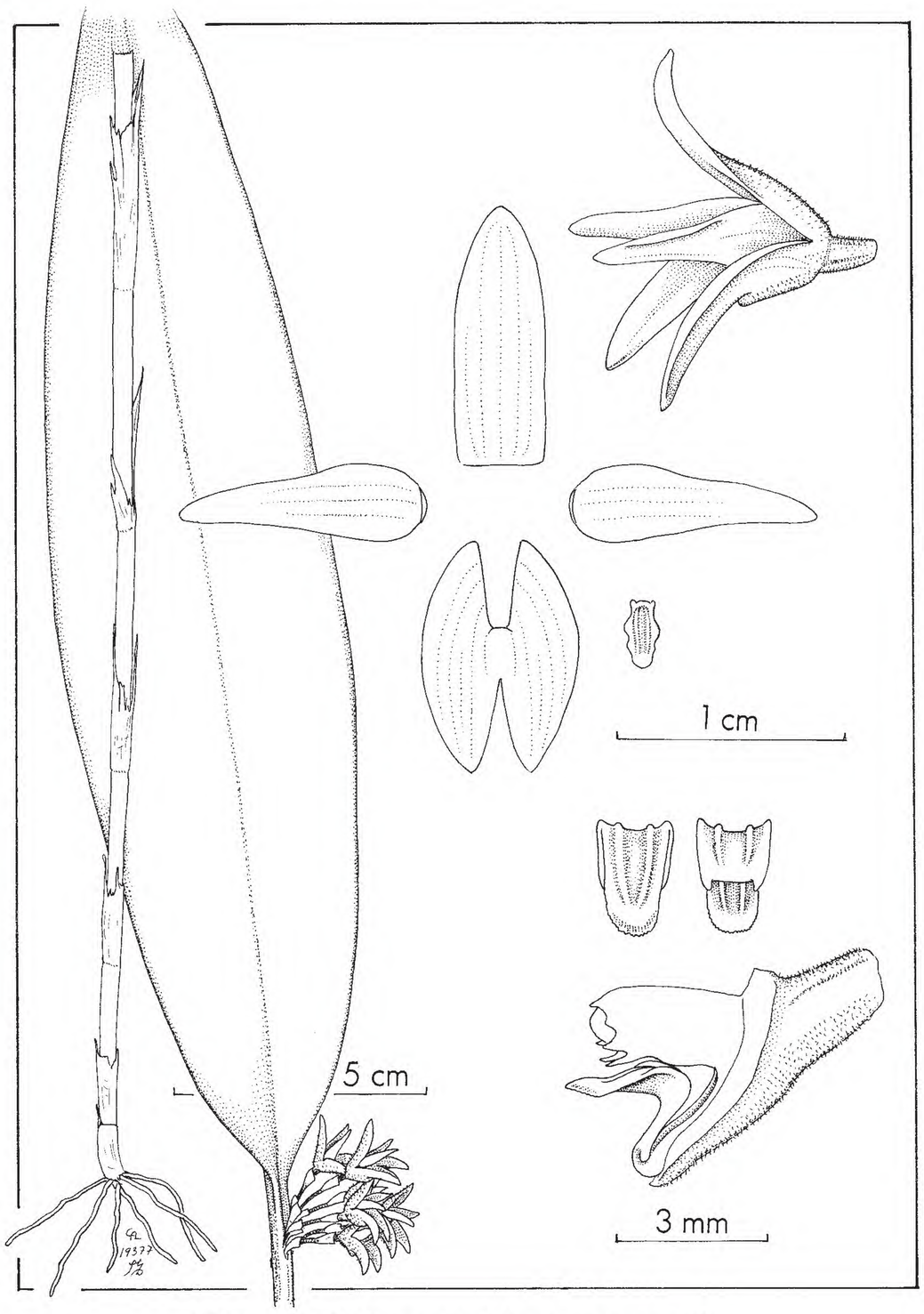


Fig. 9. Myoxanthus werneri

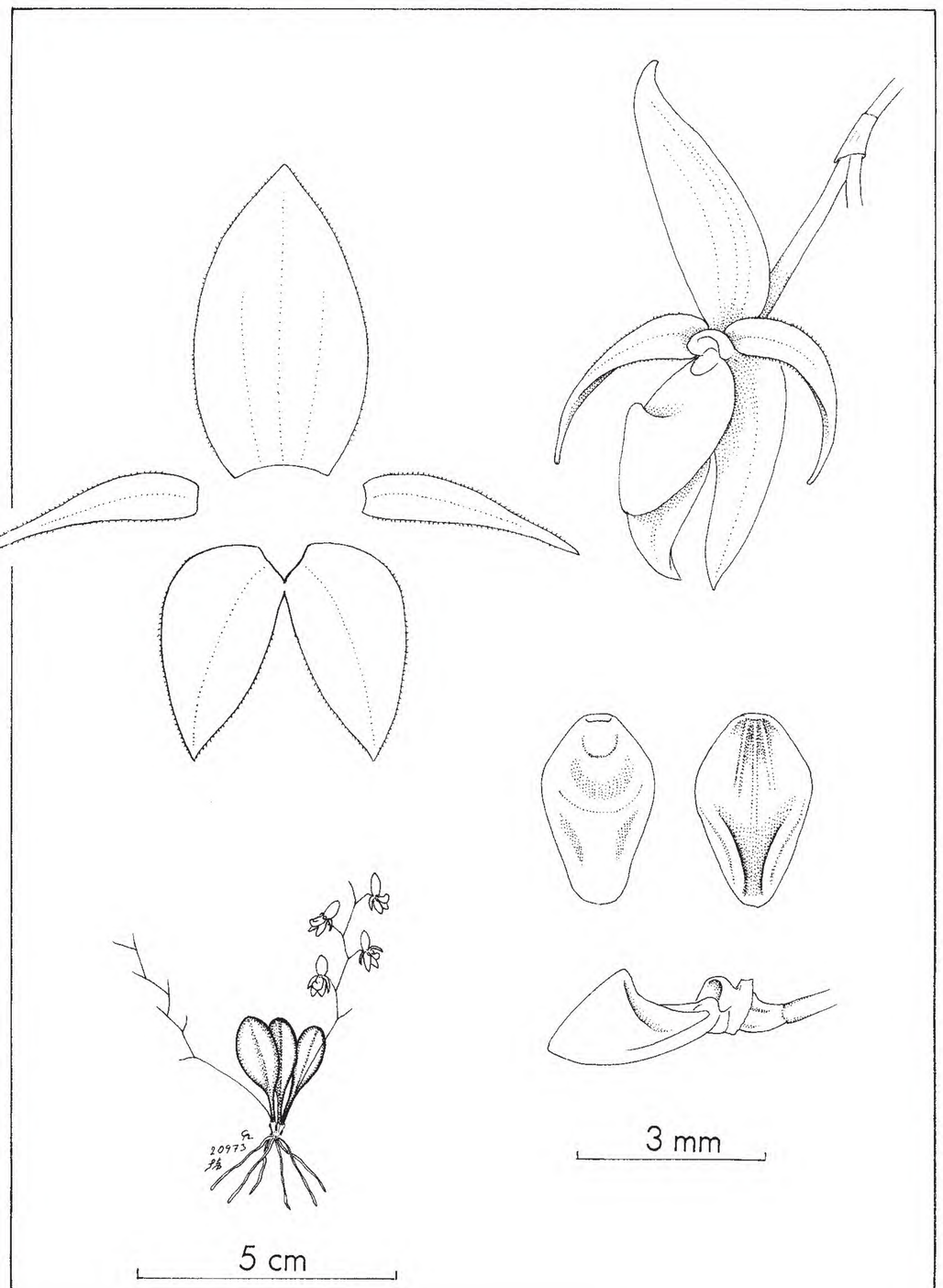


Fig. 10. Platystele tobarii

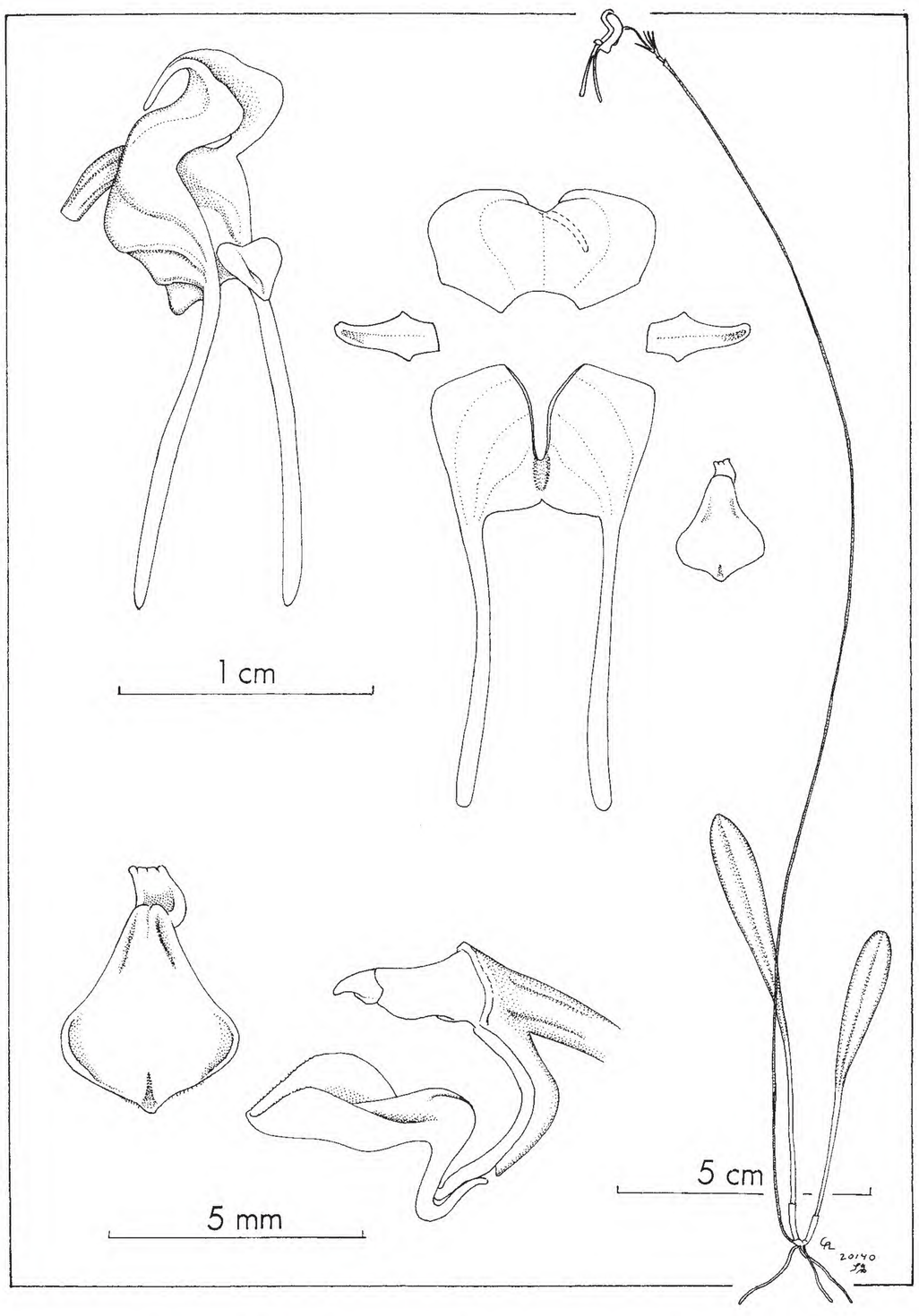


Fig. 11. Porroglossum marniae

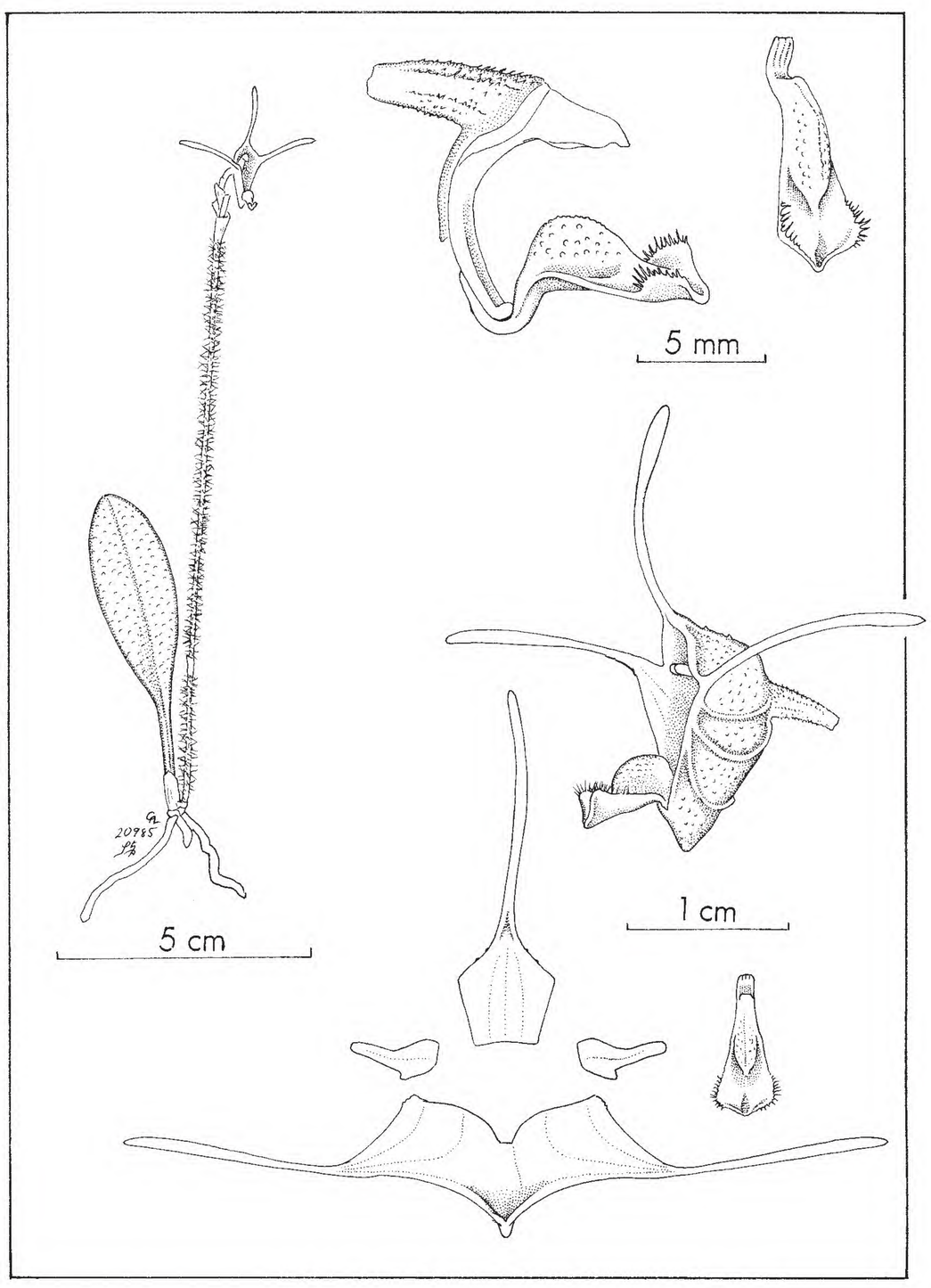


Fig. 12. Porroglossum parsonsii

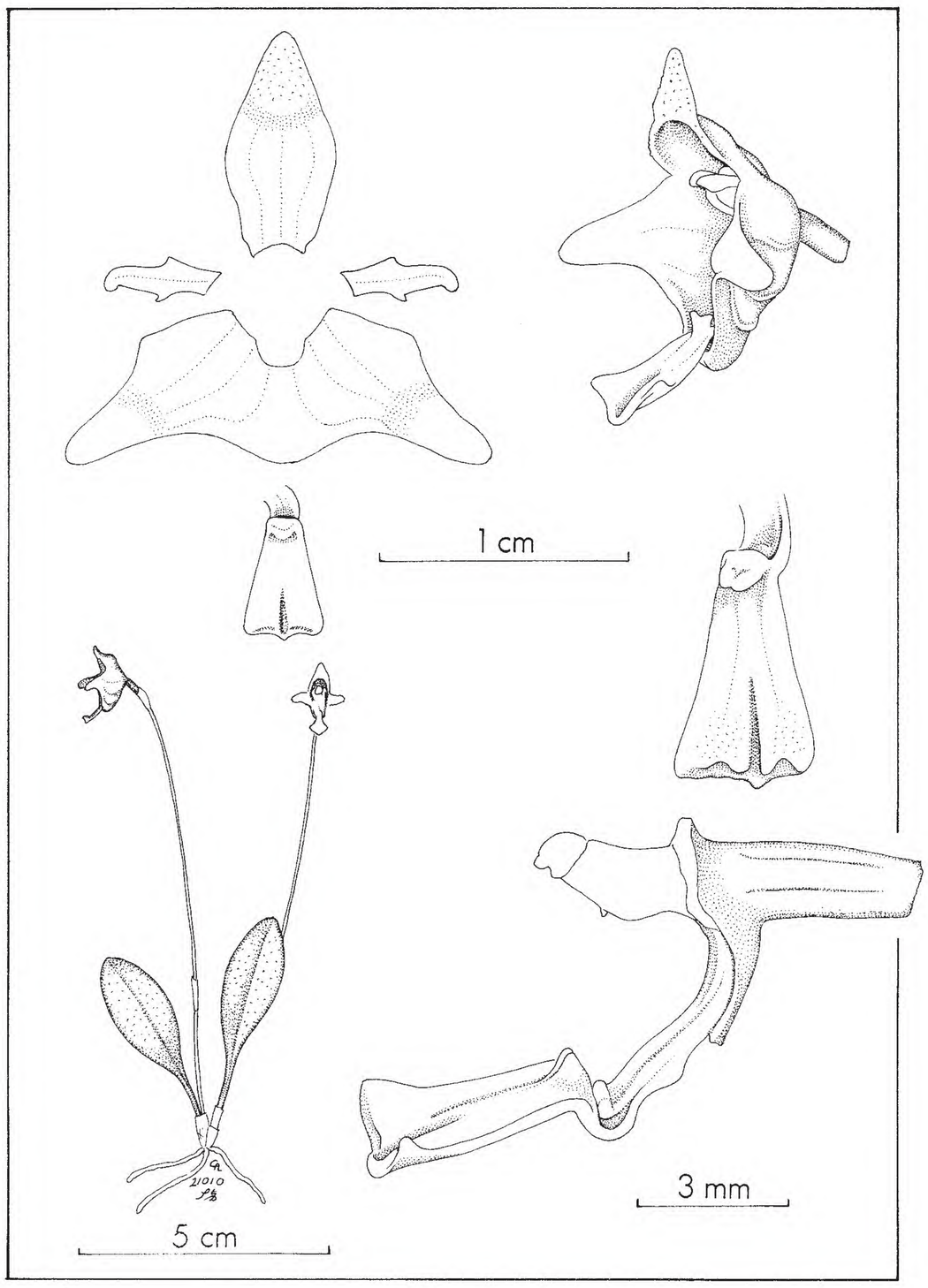


Fig. 13. Porroglossum sijmii

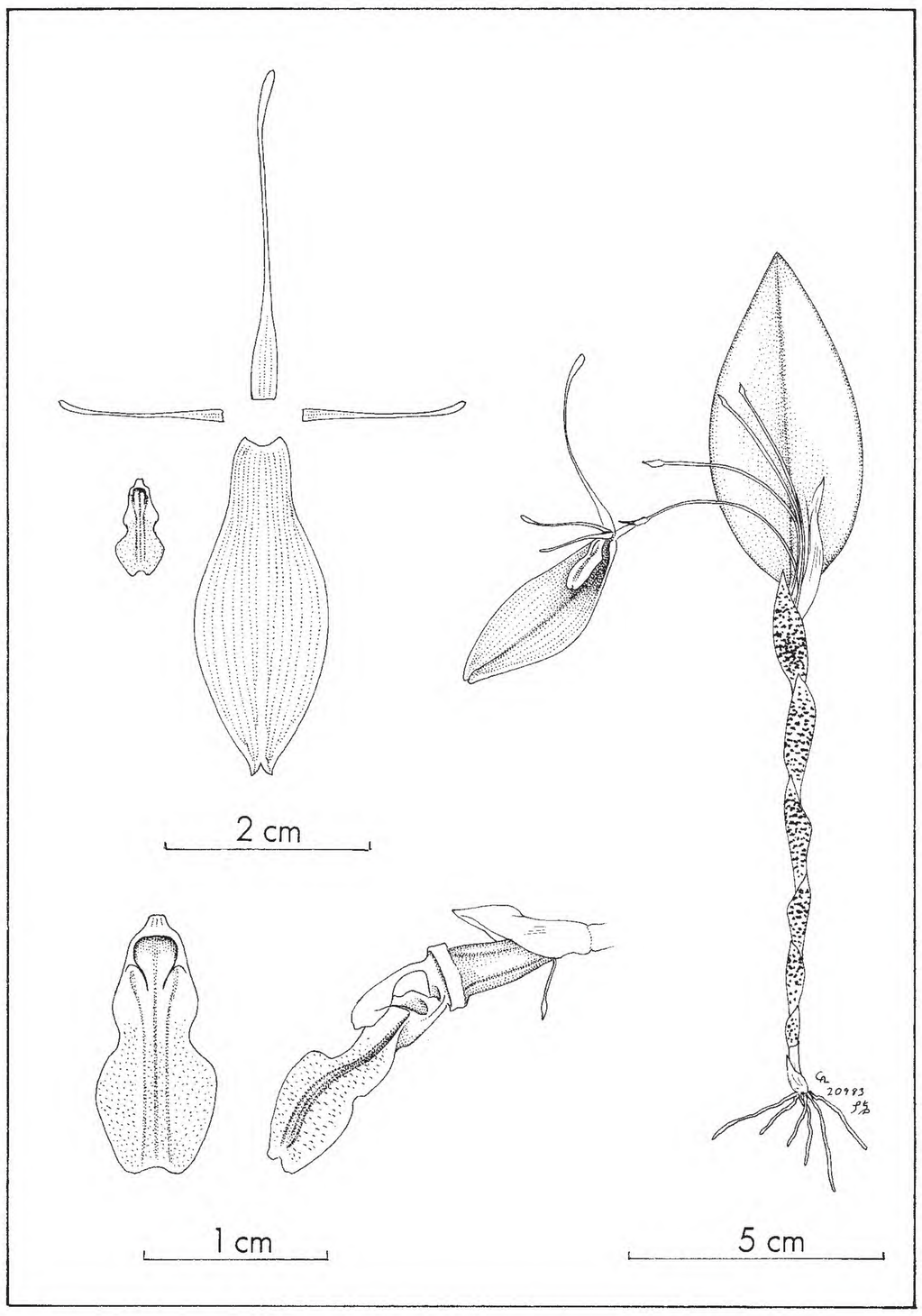


Fig. 14. Restrepia persicina

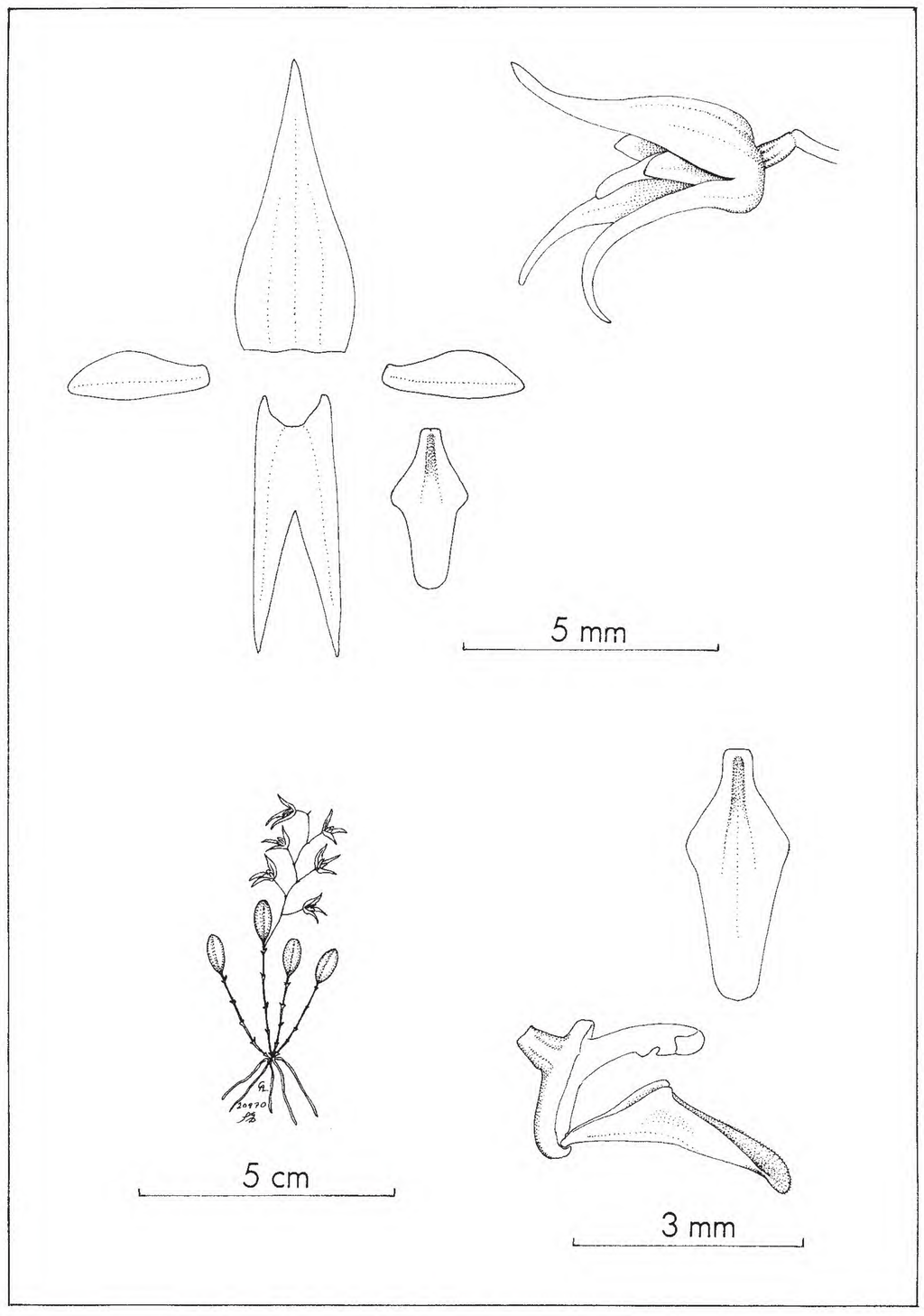


Fig. 15. Trichosalpinx jostii

ADDENDA TO *SYSTEMATICS OF MASDEVALLIA*

Since the last addenda to the *Systematics of Masdevallia* in *Icones Pleurothallidinarum* XXVII, some of the subgenera of *Masdevallia* Ruiz & Pav. have been elevated to generic status (Luer, 2006). To retain the continuity of the *Systematics of Masdevallia*, the new species referable to the newly proposed genera will be treated in the same format, so that the pages may be removed and added to their respective volumes. The pages are numbered to indicate places for insertion, i.e., 41a. to precede 41.

Alaticaulia royi Luer, new species
Luzama gemmula Luer & V.N.M. Rao, new species
Masdevallia gastrodes Luer & Sijm, new species
Masdevallia ivanii Luer & V.N.M. Rao, new species
Masdevallia magaliana Luer & V.N.M. Rao, new species
Masdevallia nijhuisiae Luer & Sijm, new species
Spilotantha ferrusii Luer, new species

Loddigesia Luer, gen. nov.

Type: *Dendrobium quadrifidum* La Llave & Lex., Nov. Veg. Descr. 2: 40, 1825 [=*Loddigesia quadrifida* (La Llave & Lex.) Luer].

Ety.: Named for Conrad Loddiges (1738-1826), who imported and cultivated this species.

Racemus multiflorus. Sepalum dorsale synsepalumque similes; petala similes sed minores. Labellum subpanduratum.

The single species of this genus was first published by Lindley in Hooker's Exotic Flora in Sept. 1824 as *Pleurothallis racemiflora*, and with *Dendrobium racemiflorum* Sw. in synonymy. By strictest interpretation of an obscure rule of nomenclature, the name becomes illegitimate. The next available name is *Dendrobium quadrifidum* of March 1825.

Loddigesia quadrifida (La Llave & Lex.) Luer, comb. nov.

Bas.: *Dendrobium quadrifidum* La Llave & Lex., Nov. Veg. Descr. 2: 40, 1825.

Ety.: From the Latin *quadrifidus*, "divided into four parts," referring to the perianth.

Syn.: *Pleurothallis racemiflora* Lindl. ex Lodd., Bot. Cab. 10, t. 949, 1824.
Syn.: *Stelis racemiflora* (Lindl. ex Lodd.) Lodd. ex Baxt.
Syn.: *Pleurothallis quadrifida* (La Llave & Lex.) Lindl.
Syn.: *Pleurothallis ghiesbreghtiana* A.Rich. & Galeotti
Syn.: *Anathallis racemiflora* (Lindl. ex Lodd.) Pridgeon & M.W.Chase
Syn.: *Stelis racemiflora* (Lindl. ex Lodd.) Pridgeon & M.W.Chase.

The combination of a multiflowered raceme longer than the leaf; an elliptical dorsal sepal and synsepal free and similar; similar elliptical petals nearly as large; and a pandurate lip broadly rounded above the middle distinguish the genus and species from all other pleurothallids. For the lack of a better accommodating taxon, this species was recently included in *Pleurothallis* subgenus *Effusia*.

Illustration: Icones-XX: 79, 2000, Fig. 34.

Myoxanthus werneri Luer, sp. nov. Fig. 9.

Ety.: Named for Florian Werner of the University of Göttingen, Germany, who first collected this species.

Species haec *Myoxanthus affinis* (Lindl.) Luer affinis, sed sepalis petalisque crassioribus latioribusque, labello valde arcuato, et columnae pede elongato gynostemio aequilongo differt.

Plant large, epiphytic, caespitose; roots coarse. Ramicauls stout, erect, 50 cm long, enclosed by 6 long, tubular, hispidulous sheaths. **Leaf** erect, coriaceous, elliptical, 28 cm long, 5.5 cm wide, cuneate below into the subpetiolate base ca. 1 cm long. **Inflorescence** a fascicle many, single, simultaneous flowers, near the apex of the ramicaul, the peduncles minutely pubescent, 8-11 mm long; floral bracts infundibular, pubescent, 5 mm long, enclosing pedicel; pedicel, stout, 5 mm long; ovary densely short-pubescent, 2 mm long, 2 mm wide; **sepals** "woolwhite," spotted with wine red, sparsely and shortly pubescent, the dorsal sepal oblong, obtuse, 11.5 mm long, 4 mm wide, 5-veined, the lateral sepals connate 4 mm to the sides of the column-foor, and 2 mm above, elliptical, oblique, acute, 10 mm long, 3.5 mm wide, 5-veined; **petals** narrowly ovate, thickened above the middle with thickened margins, narrowly obtuse, 11 mm long, 3 mm wide, 3-veined; **lip** oblong, strongly arcuate in the middle, 3.5 mm long, 1.5 mm wide, the apex rounded, minutely erose, the disc with a pair of longitudinal carinae from the base to near the apex, the base truncate, bilobulata, hinged on the end; **column** stout, semiterete, 3 mm long, 1.5 mm wide, denticulate at the apex, the foot concave, stout, 3 mm long.

ECUADOR: **Zamora-Chinchipe**: Estación Cientifica San Francisco, between Loja and Zamora, alt. 2010 m, 7 Feb. 2005, *F. Werner 1481* (Holotype: MO; Isotype:), C. Luer illustr. 20928.
ECUADOR: **Zamora-Chinchipe**: *F. Werner 12620* (MO), C. Luer illustr. 19377.

This large species is related to *M. affinis* (Lindl.) Luer, but distinguished by the fleshy flowers with wider sepals and petals, and an oblong lip that is acutely arcuate near the middle. The biauriculate base is attached to the end of an elongated column foot from whence the folded center of the lip is lodged near the base of the much larger gynostemium, beneath which the lower half of the lip is held.

Ogygia Luer, gen. nov.

Ety.: Named for Ogygia, the remote island home of Calypso.

Type: *Pleurothallis unguiculosa* Ames & C.Schweinf.

Planta parva breviter repens, racemis paucis folio brevioribus, sepalis carnosis lateralibus connatis, labello subquadratO unguiculato distinguitur.

This is a unispecific genus, endemic on the Revillagigedo Islands in the Pacific Ocean south of Mexico, with a description, albeit poor, of the species sufficing for the genus.

Ogygia unguicallosa (Ames & C.Schweinf.) Luer, comb. nov.

Ety.: From the Latin *unguicallosus*, "with clawed callus," referring to the "prominent callus at the apex of the claw."

Bas.: *Pleurothallis unguicallosa* Ames & C.Schweinf., Proc. Biol. Soc. Wash. 43: 195, 1930.

Plant small, epiphytic, shortly repent; roots slender. Ramicauls slender, suberect to horizontal, 2-5 cm long, enclosed by a tubular sheath from below the middle and 2-3 sheaths at the base. **Leaf** more or less horizontal, suffused with purple beneath, coriaceous, elliptical, acute to subacute, 4-5.5 cm long, 8-12 mm wide, cuneate below at the sessile base. **Inflorescence** 1-4, much shorter than the leaf, with up to 4 flowers, borne from a small spathe at the base of the leaf; floral bracts minute, infundibuliform; pedicels and ovary not described; **sepals** fleshy, the dorsal sepal oblong-obovate, concave, carinate, 5.2-5.5 mm long, almost 2 mm wide, 3-veined, the lateral sepals "obliquely lanceolate," but connate into a ovate lamina, 5 mm long, 5 mm wide, 6-veined, sharply bicarinate, sharply bidentate at the apex, saccate at the base; **petals** membranaceous, "obliquely oblanceolate-linear," acute, about 3 mm long, 1-veined, with the upper margin irregular; **lip** simple, recurved, "clawed," 3.2 mm long, "*the claw subquadrate, slightly angled on each side near the base, adorned near the apex with a transverse, fleshy callus which is elevated-quadrate at the base and gradually tapers into the lower part of the lamina, lamina about 2.4 mm long, in natural position abruptly dilated into auricles at the base, gradually constricted in the middle with upcurved sides, and slightly dilated in front; when expanded, the lamina is oblong-quadrate or oblong-lanceolate, indistinctly bicarinate near the center, acute at the rounded apex, anterior margins denticulate, upper surface studded with approximate papillae;*" column arcuate, shorter than the petals, triangular-winged, the foot stout, equally long; anther galeate; pollinia uncertain.

MEXICO: **Revillagigedo Islands**: Socorro Island, east slope, 5 May 1925, *H.L. Mason 1628* (Holotype: CAS, sterile; Isotype: AMES, sterile; southeast flank of Cerro Evermann, alt. 825 m, 12 Apr. 1978, *R. Moran 25507* (MO, sterile; SD, sterile).

From the detailed description compiled by Schweinfurth, and transcribed above, no clear picture of this elusive species and be imagined. As of today, no adequate floral material exists in herbaria for study.

Physosiphon asperrimus (Luer) Luer, comb. nov.

Bas.: *Pleurothallis asperrima* Luer, Phytologia 49: 201, 1981.

Ety.: From the Latin *asperrimus*, "very exaspirate," referring to the inner surfaces of the sepals.

Platystele tobarii Luer, sp. nov. Fig. 10.

Ety.: Named for Francisco Tobar of Mindo, co-collector of this species.

Species haec *Platystelis rhinocerae* Luer & Hirtz similis, sed floribus majoribus, sepalo dorsali trinervis quam lateralibus majore, sepalis petalisque minutissime ciliatis, et labello ad medium protuberanti differt.

Plant small, epiphytic, densely caespitose; roots slender. Ramicauls erect, slender, 3 mm long, enclosed by 2-3 thin, ribbed sheaths. **Leaf** erect, coriaceous, petiolate, 15-22 mm long including a petiole 5-6 mm long, the blade broadly elliptical, obtuse, 6-8 mm wide, cuneate below into the petiole. **Inflorescence** a suberect, loose, distichous, subflexuous, successively few- to several-flowered raceme to 4 cm long, borne by a filiform peduncle 2-3 cm long, from low on the ramicaul; floral bracts oblique, 1 mm long; pedicels 3-4 mm long; ovary 1 mm long; **sepals** translucent yellow with rose veins, microscopically ciliate-cellular pubescent, the dorsal sepal ovate, concave, subacute, 5 mm long, 3 mm wide, 3-veined, the lateral sepals ovate, oblique, acute, 4 mm long, 2 mm wide, 1-veined, free to the base; **petals** yellow, minutely ciliate, narrowly triangular-ovate, oblique, acute, 4 mm long, 0.8 mm wide; **lip** dark rose, thick, fleshy, cellular-glandular, ovoid, round at the apex, 3.2 mm long, 1.8 mm wide, the disc convex with a subpyramidal cone that fills the distal half, concave beneate, the base truncate with an obscure glenion, firmly hinged to the column-foot; **column** shallowly cucullate, 0.5 mm long and broad, the stigma bilobed, the foot rudimentary.

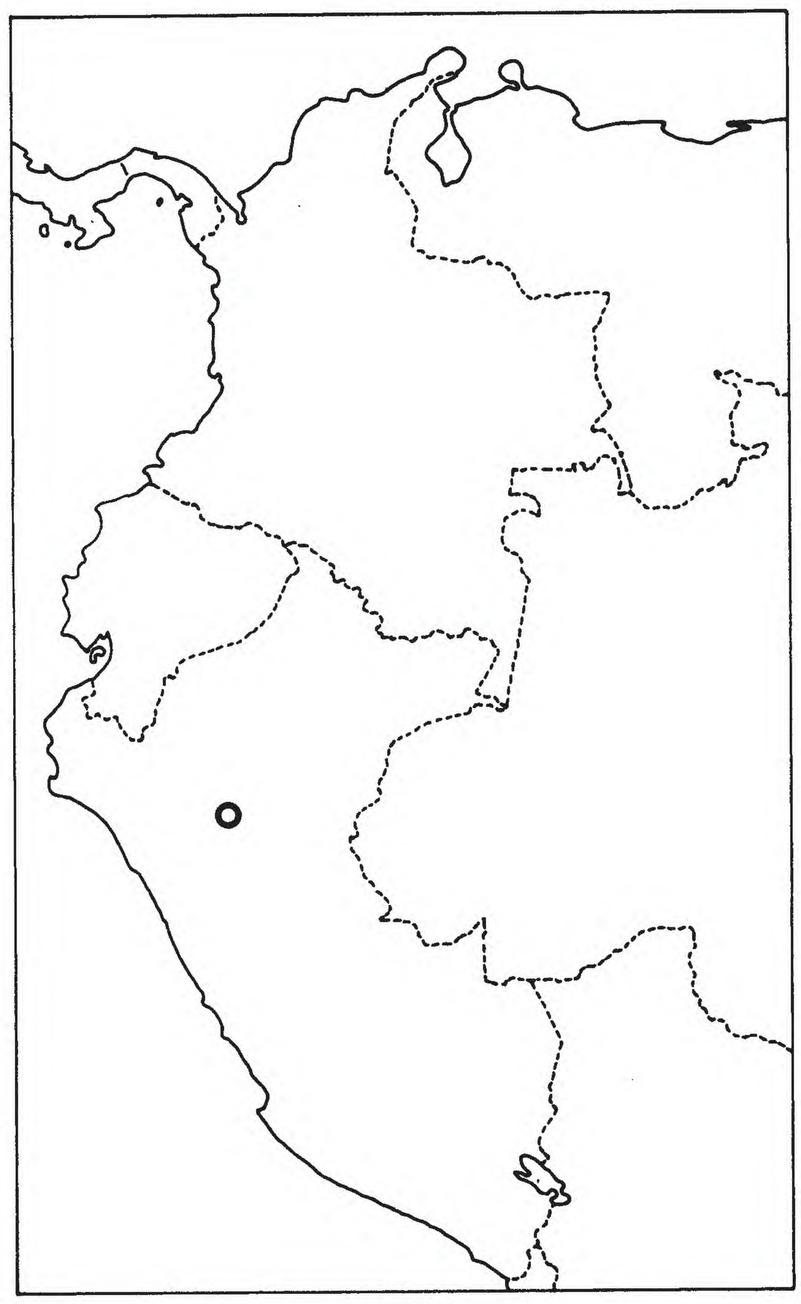
Alaticaulia royi Luer, sp. nov.

Ety.: Named for Roy Barrow of Great Missenden, Buckinghamsgire, England, who imported and cultivates this species.

Species haec *Alaticauliae mezae* (Luer) Luer persimilis, sed habitu duplomajori, petalis subtriangularibus marginibus supra basim obtuse angulatis, et labello ad apicem acute incurvo apiculato differt.

Plant large, epiphytic, caespitose; roots fleshy. Ramicauls erect, stout, 4-5 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, thickly coriaceous, linear-elliptic, 20 cm long including the petiole 3-4 cm long, the blade subacute to obtuse, 2.5 cm wide, narrowly cuneate below into the petiole. **Inflorescence** a strong, erect, triquetrous peduncle to 25 cm long, bearing a subcongested, successively flowered raceme, 0.5 cm between flowers, with a bract near the base, from low on the ramicaul; floral bracts tubular, 1.5-2 cm long; pedicels 3-4.5 cm long; ovary 5-6 mm long; flowers red-purple; **sepals** glabrous, the dorsal sepal ovate, 13-15 mm long, 6-7 mm wide at the stoma of the tube, 3-veined, connate to the lateral sepals for 5-6 mm to form a short sepaline tube, the apex acute, contracted into an erect tail 4-6 cm long, the lateral sepals, oblong, 20-25 mm long, 8-9 mm wide, 3-veined, connate 6-7 mm basally, obliquely obtuse at the apex, the apices contracted into tails 3.5-5 cm long; **petals** cartilaginous, ovate-triangular, 6 mm long, 2 wide, 3 mm wide above the base at prominent, obtuse angle on the lower margin, and a lower, more obtuse angle on the upper margin, with a low, rounded callus above the base, the apex obliquely obtuse, microscopically erose; **lip** pandurate, 5 mm long, 2 mm wide, the epichile 2 mm long, obovate, with the sides recurved and the apiculate apex acutely decurved, the hypochile oblong, featureless, hinged beneath; **column** semiterete, 5.5 mm long, the foot 3.5 mm long including a short, incurved extension.

PERU: without collection data, purchased from Manuel Arias in Lima by Roy Barrow, cultivated at Royden Orchids, Great Missenden, Buckinghamshire, England, April 2006, *R. Barrow s.n.* (Holotype: MO), C. Luer illustr. 21012; cultivated by Manuel Arias, *S. Dalström 18-06* (Holotype: ; Isotype: MO), C. Luer illustr. 21015.



This species is very similar to *Alaticaulia mezae* (Luer) Luer, except for its greater size, both being natives of Peru. Both species bear a slowly successive raceme of long-tailed pale yellow-green flowers with the sepals minutely dotted with purple. *Alaticaulia royi* is also related to *A. cinnamomea* (Rchb.f.) Luer with equally large flowers, but the flowers are browm externally, dotted with brown internally, and produced simultaneously in a few-flowered raceme. The petals and lip of *A. royi* are more similar to those of *A. cinnamomea* than to *A. mezae*.

ICONES PLEUROTHALLIDINARUM

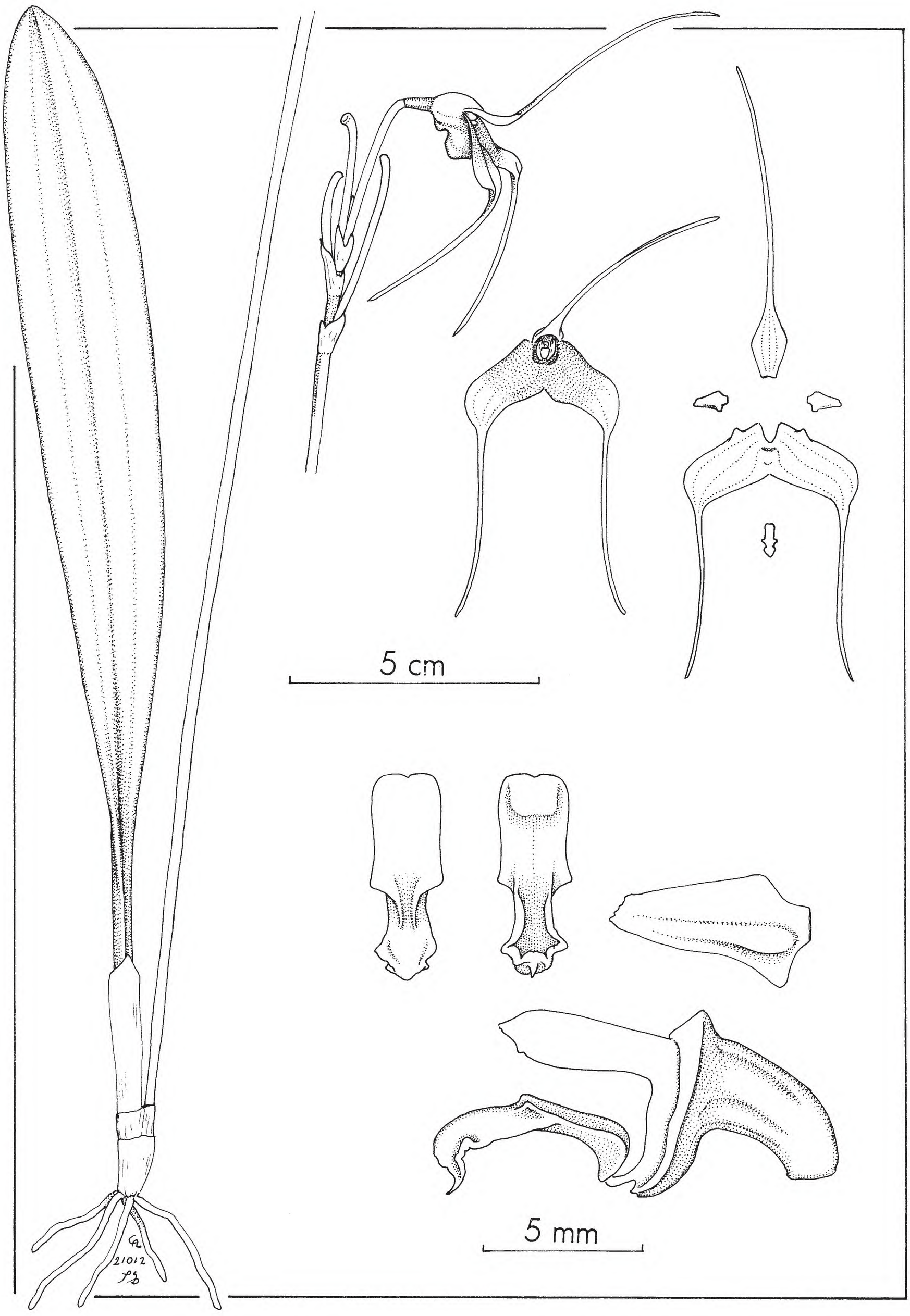


Plate 675. Alaticaulia royi

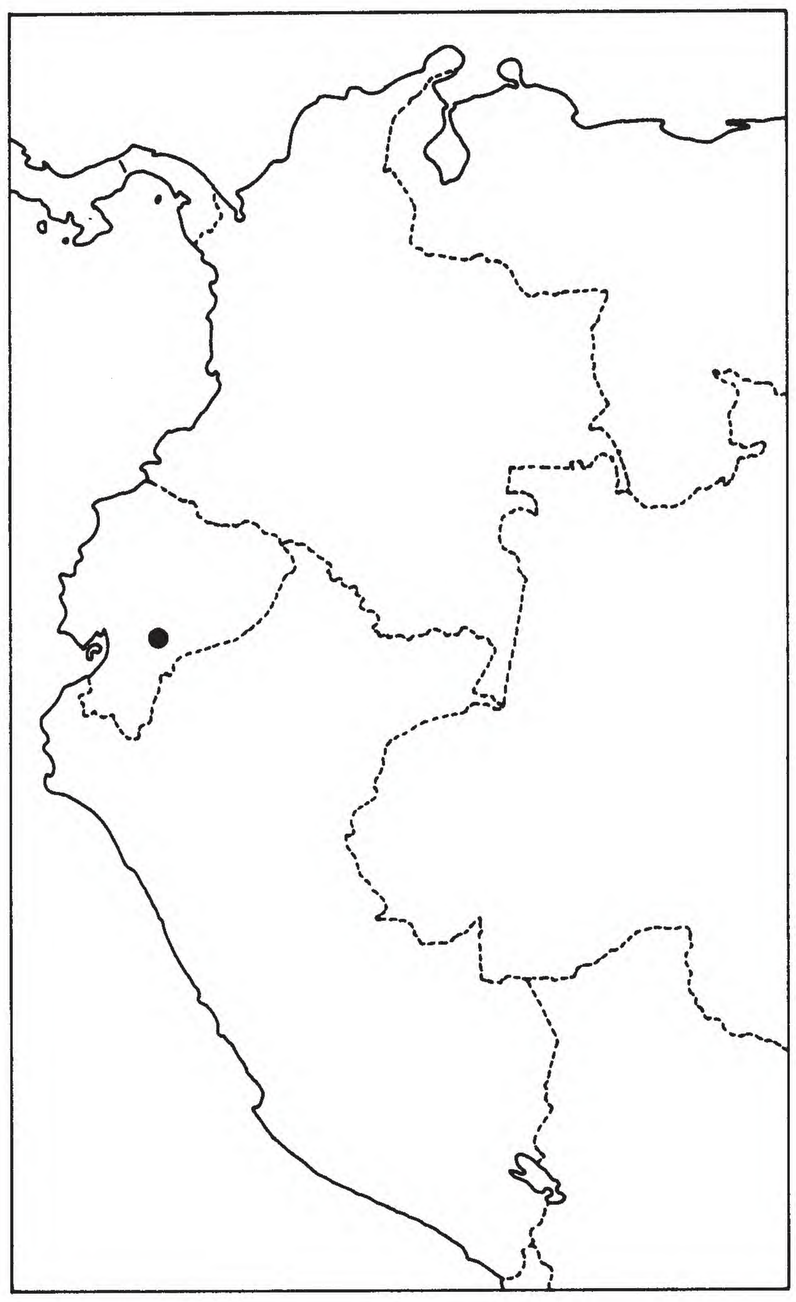
Luzama gemmula Luer & V.N.M. Rao, sp. nov.

Ety.: From the Latin *gemmula*, "a little gem," referring to its pleasant qualities.

Species haec *Luzanae mentosae* (Luer) Luer affinis, sed habitu minore, foliis minute verruculosis, pedunclo folio breviore et sepalis proportione latioribus obtusis differt.

Plant very small, epiphytic, caespitose; roots fleshy. Ramicauls erect, 2-5 mm long, enclosed by 1-2 loose, tubular sheaths. **Leaf** erect, coriaceous, minutely verrucose, elliptical, subacute to obtuse, 18-25 mm long including a petiole 5-8 mm long, 6-7 mm wide, narrowly contracted below into the petiole. **Inflorescence** a solitary flower followed by a second, borne by a proportionately stout, erect or suberect peduncle 15 mm long, with a bract near the base, from low on the ramicaul; floral bract tubular, 6-9 mm long; pedicel 7-11 mm long; ovary 3 mm long; **sepals** pale rose, suffused in areas below the middle with purple, diffusely cellular-glandular within, the dorsal sepal held forward, ovate, acute, shallowly concave, 8 mm long, 5 mm wide expanded, 3-veined, connate to the lateral sepals for 3 mm to form a shallow, sepaline cup, the lateral sepals broadly and obliquely elliptical, obtuse, 8 mm long, 5 mm wide, connate 3 mm, each 3-veined, the apices obtuse; **petals** greenish white, cartilaginous, more or less narrowly ovate, acute at the apex, 3.5 mm long, 1 mm wide, 1-veined, the labellar margin with a low, broad, obtuse process between the middle and basal thirds; **lip** purple-brown, elliptical, obtuse, slightly arcuate, 5 mm long, 3 mm wide, shallowly concave centrally, the disc featureless, the base truncate, shallowly notched, hinged beneath; **column** greenish white, semiterete, 3 mm long, the foot 3.5 mm long with a proportionately long, incurved extension.

ECUADOR: **Morona-Santiago**: without specific locality, alt. ca. 1200 m, purchased from Ecuagenera, flowered in cultivation in Wilmington, DE, 14 Feb, 2006, by *M. Rao 216* (Holotype: MO), C. Luer illustr. 20998.



This pretty, little species from southeastern Ecuador, is closely related to *Luzama mentosa* (Luer) Luer from east-central Ecuador. It is distinguished from the latter by a smaller habit and a peduncle shorter than minutely verrucose leaves. Except for the smaller size, the pale rose flowers variously suffused with purple are superficially similar. The petals are acute with a low, obtuse callus, and the lip is simply elliptical and obtuse.

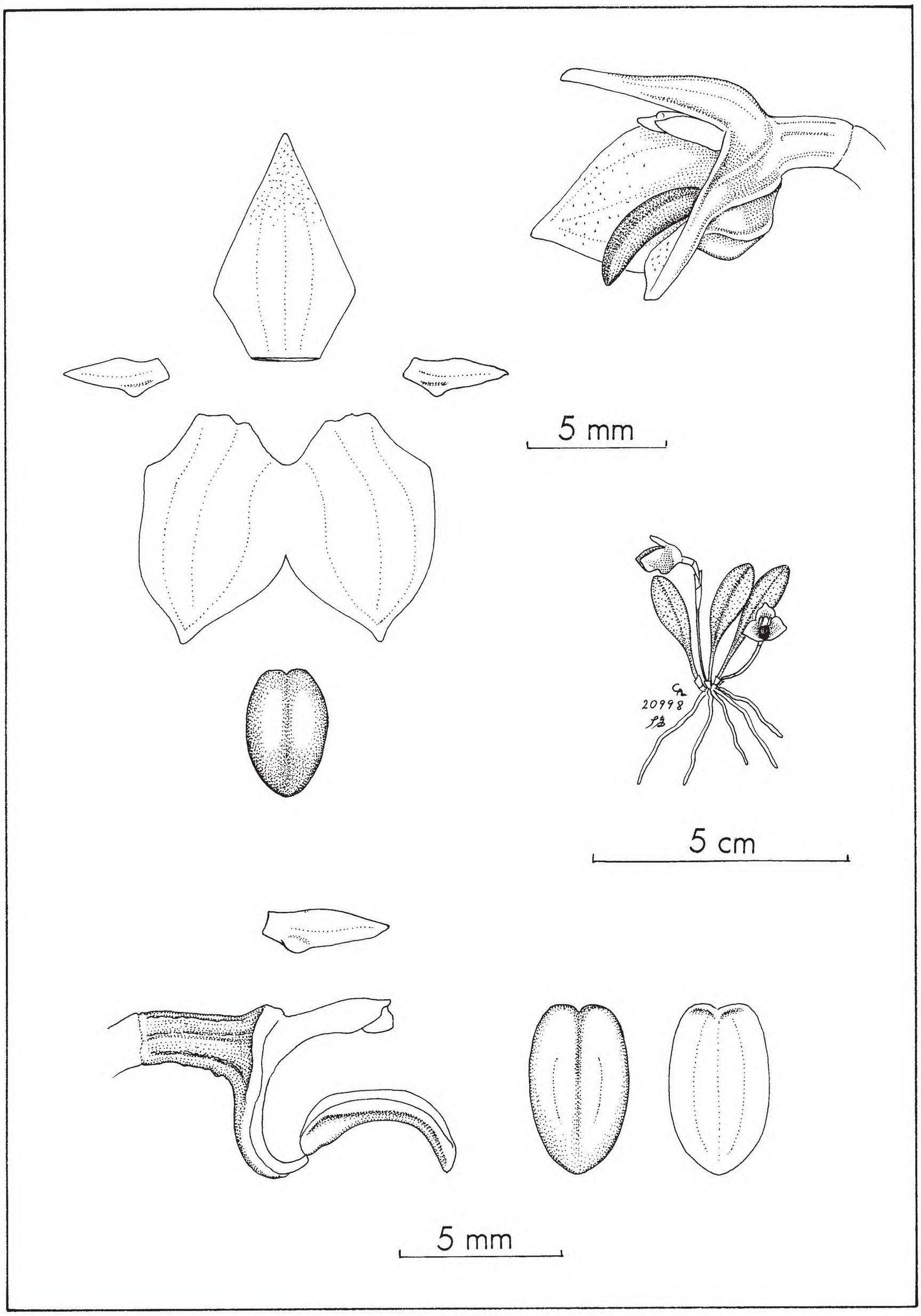


Plate 676. Luzama gemmula

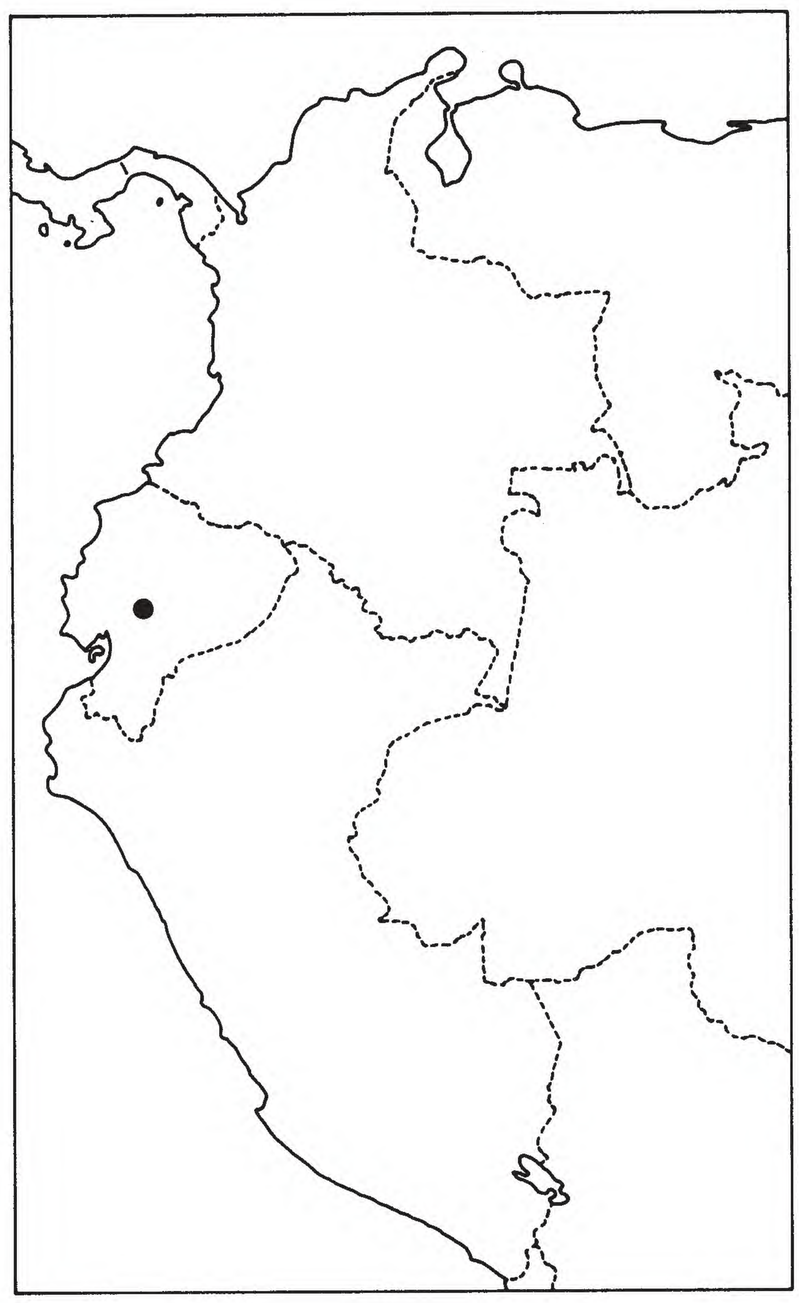
Masdevallia gastrodes Luer & Sijm, sp. nov.

Ety.: From the Greek *gastrodes*, "potbellied," referring to the sepaline tube.

Inter species subsectionis *Masdevalliae*, planta mediocris flore parvo, sepalorum tubo ad basim inflato, petalorum lamina tenui cum processu gracili incurvo et labello leviter obovato ad apicem acutissimo incurvo distinguitur.

Plant medium in size, epiphytic, caespitose; roots fleshy. Ramicauls erect, stout, 1-1.2 cm long, enclosed by 1-2 loose, tubular sheaths. **Leaf** erect, coriaceous, 5 cm long including a petiole ca. 1.5 cm long, the blade elliptical, obtuse, 1.7 cm wide, cuneate below into the petiole. **Inflorescence** a solitary flower borne by a slender, erect peduncle 5 cm long, with a bract below the middle, from low on the ramicaul; floral bract tubular, 7 mm long; pedicel 7 mm long; ovary 4 mm long; **sepals** glabrous, the dorsal sepal rose-purple, broadly obovate, concave, 9 mm long, 7 mm wide expanded, 3-veined, connate 4.5 mm to the lateral sepals to form a tube with an inflated chin, the apex obtuse, contracted into an erect tail 16 mm long, the lateral sepals pale rose, more or less oblong, concave in the basal third, 11 mm long, 10 mm wide together, connate ca. 5 mm across a transverse fold, each 3-veined, the apices obtuse, contracted into slender, descending tails 14 mm long, similar to that of the dorsal sepal; **petals** white, thinly cartilaginous, more or less oblong, broader below the middle, acute at the apex, the labellar margin with a thin lamella ending at the base with a slender, acute, retrorse process, 5 mm long, 1.8-2.5 mm wide; **lip** oblong-obovate, thin, arcuate, with the apex recurved, 5.5 mm long, 2.5 mm wide, the apex acute, with a minute, midline, apical lobule, the disc thickened in the basal third, shallowly concave above, otherwise featureless, the bottom surface with a thin, midline keel along the midvein; the base truncate, hinged beneath; **column** semiterete, 4 mm long, the foot 4 mm long including a free, incurved extension.

ECUADOR: **Bolívar**: without collection data, flowered in cultivation at Orchideeënkwerkerij, Venhuizen, the Netherlands, Oct. 2005, *T. Sijm 260115* (Holotype: MO), C. Luer illustr. 20997.



This species of *Masdevallia* subsection *Masdevallia*, is medium in size with a single, small flower borne by an erect peduncle about as long as the leaf. The sepaline tube is swollen toward the base by an inflated chin separated from a secondary chin by a deep, transverse fold. The tails are about equal in length and a little longer than the blades. The longitudinal callus of the petal is thin and terminates in a narrow, recurved tooth-like process. The lip is obovate with an acute apex out of view because of the acute deflexion.

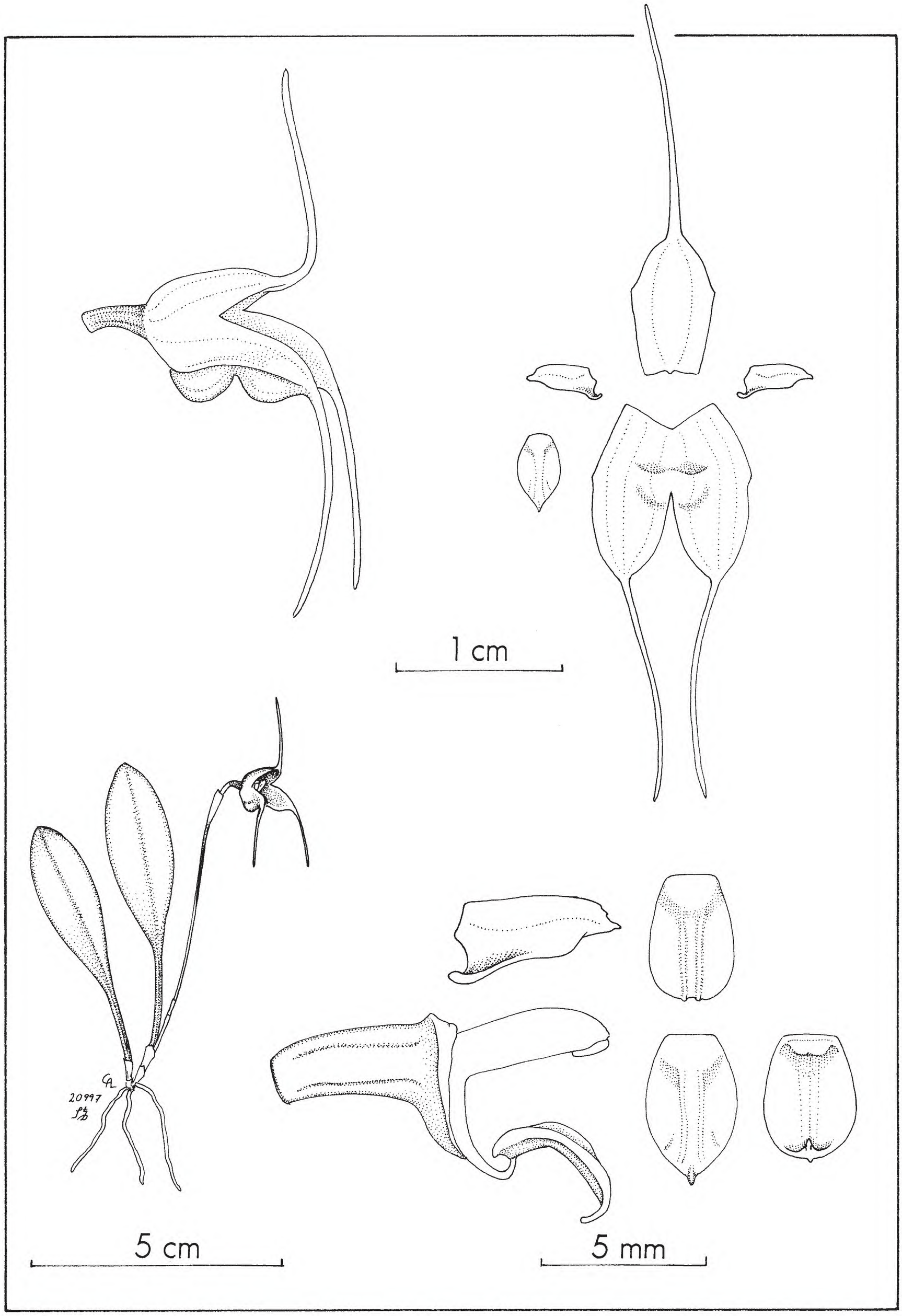


Plate 677. Masdevallia gastrodes

Masdevallia ivanii Luer & V.N.M. Rao, sp. nov.

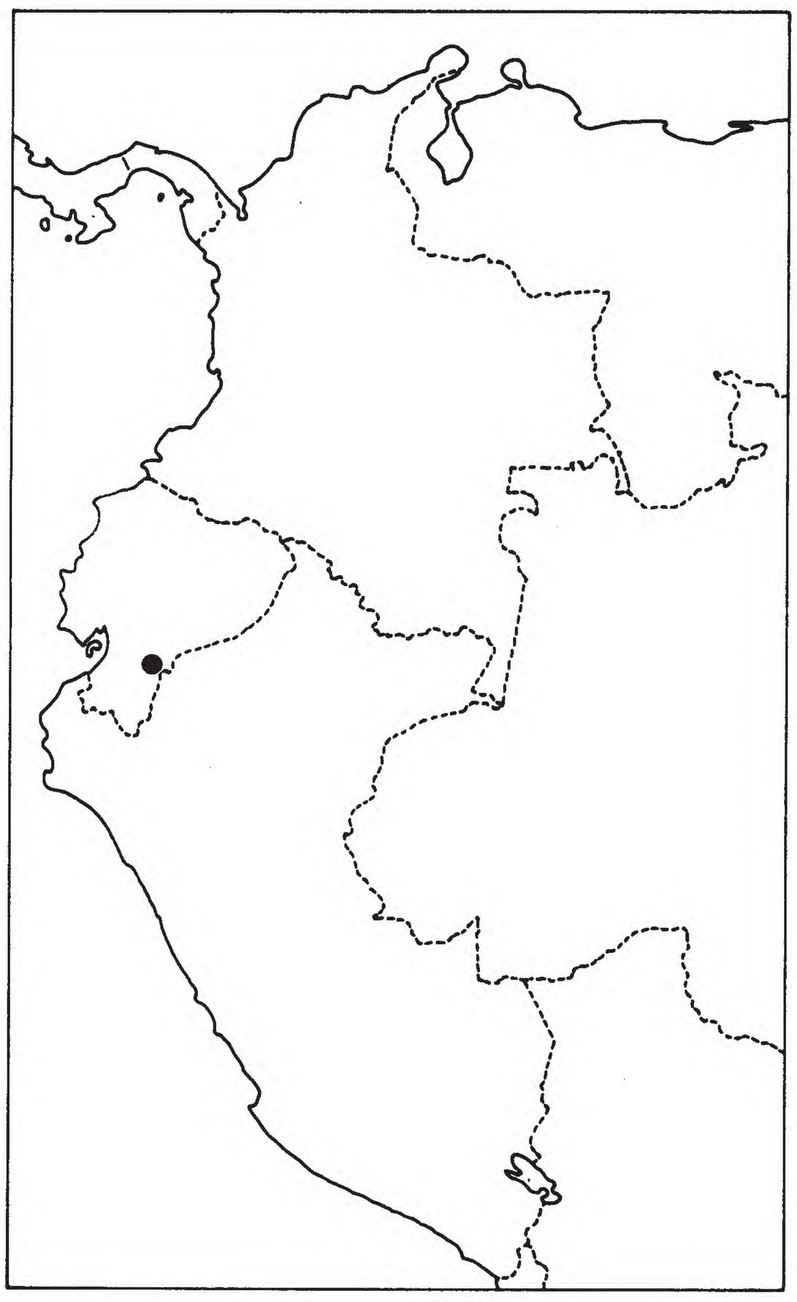
Ety.: Named for Ivan Portilla of Gualaceo, Ecuador, who collected and cultivated this species.

Inter species *Masdevalliae* subsectionis *Caudatae*, sepalis anguste ovatis longicaudatis, petalis cum processu grande basali descendenti cum callo arcuato, et labello ovato canalliculato distinguitur.

Plant small, epiphytic, caespitose; roots slender. Ramicauls blackish, erect, slender, 1-1.5 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, 3.5-6 cm long including the blackish petiole ca. 1 cm long, the blade elliptical, subacute, 1-1.5 cm wide, cuneate below into the petiole. **Inflorescence** a solitary flower borne by a slender, erect peduncle 6 cm long, with a bract near the base, from low on the ramicaul; floral bract tubular, 7 mm long; pedicel 10 mm long; ovary 7 mm long; **sepals** yellow, diffusely and minutely dotted with purple brown, diffusely cellular-glandular, the dorsal sepal narrowly ovate, shallowly concave, 14 mm long, 6 mm wide expanded, incompletely 5-veined, connate to the lateral sepals for 3 mm to form a shallow, sepaline cup, the apex obtusely, abruptly contracted into a slender, forwardly directed yellow tail 3 cm long, the lateral sepals obliquely ovate, 13 mm long, 7 mm wide, connate 2 mm, each 3-veined, the apices obliquely acute, contracted into slender, yellow tails similar to that of the dorsal sepal; **petals** white, cartilaginous, more or less triangular, narrowly acute at the apex, 5 mm long, 2 mm wide above the middle, 3.5 mm wide below the middle across a broad, obtuse, descending process, the labellar margin thickened with a broad, incurved, arcuate callus onto the descending process; **lip** yellow with rose veins, oblong, thin, 5 mm long, 3 mm wide, shallowly concave below the apex, the apex truncate, shortly recurved, with three, narrow calli, the disc sulcate medially between a pair of thin, longitudinal calli down the middle, the base obtuse, thickened, hinged beneath; **column** white, semiterete, 4 mm long, the foot 4 mm long including a long, free, incurved extension.

ECUADOR: **Morona-Santiago**: Cordillera del Condor, Manchinaza, alt. ca. 1500 m, collected by Hugo Medina and Ivan Acaro, cultivated by Ecuagenera in Gualaceo, and subsequently flowering in Wilmington, DE, 18 May 2005, *M. Rao 207* (Holotype: MO), C. Luer illustr. 20989.

This species with its narrowly ovate sepals diffusely dotted with purple-brown is superficially similar to *Masdevallia triangularis* Lindl., but the petals and lip are distinctive. The petals are narrowly acute at the apex, and below the middle a thick obtuse process descends. The lip is held erect on an elongated column-foot. The disc is thickly rounded at the base, developing into a pair of parallel calli all the way to the recurved apex.



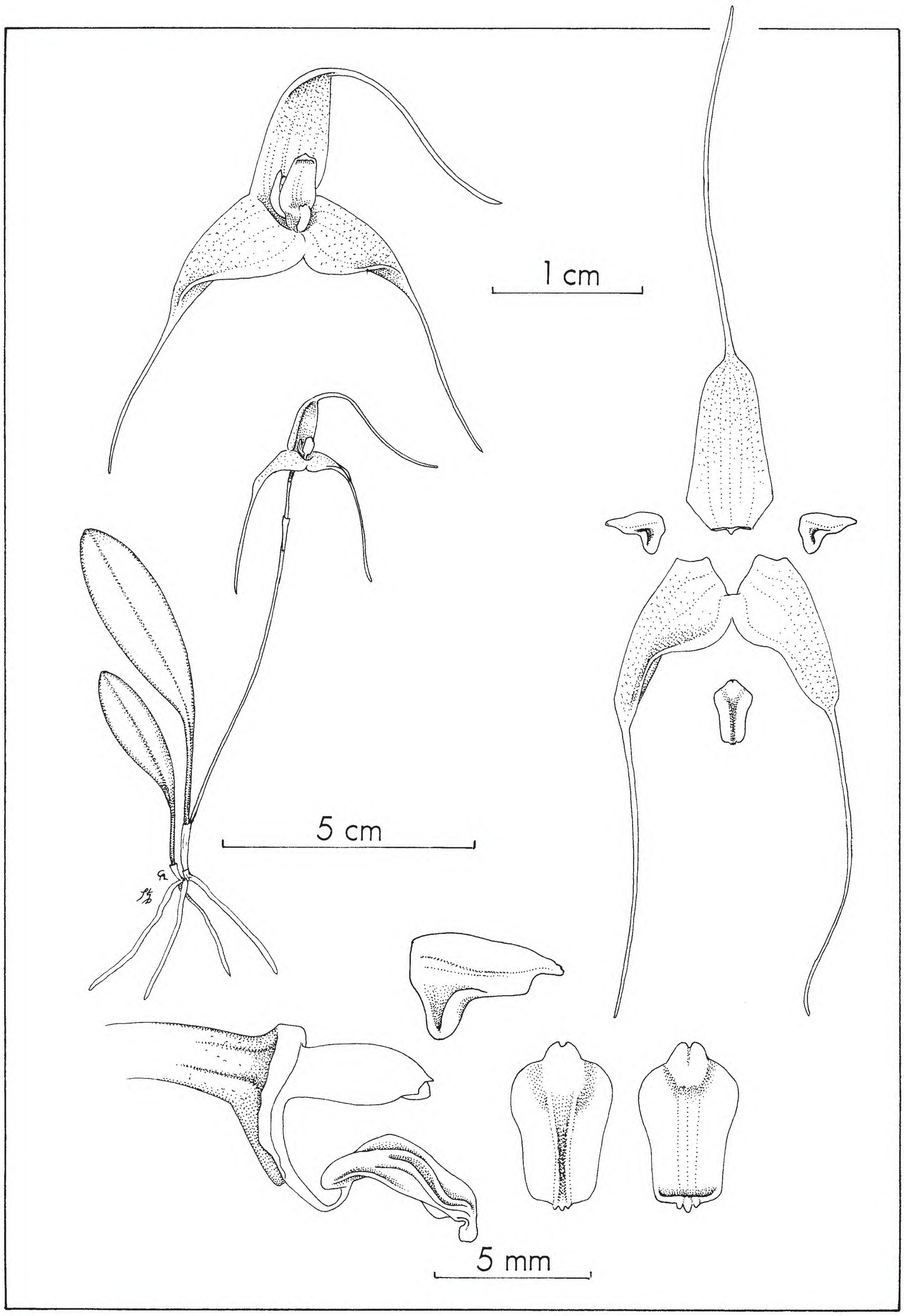


Plate 678. Masdevallia ivanii

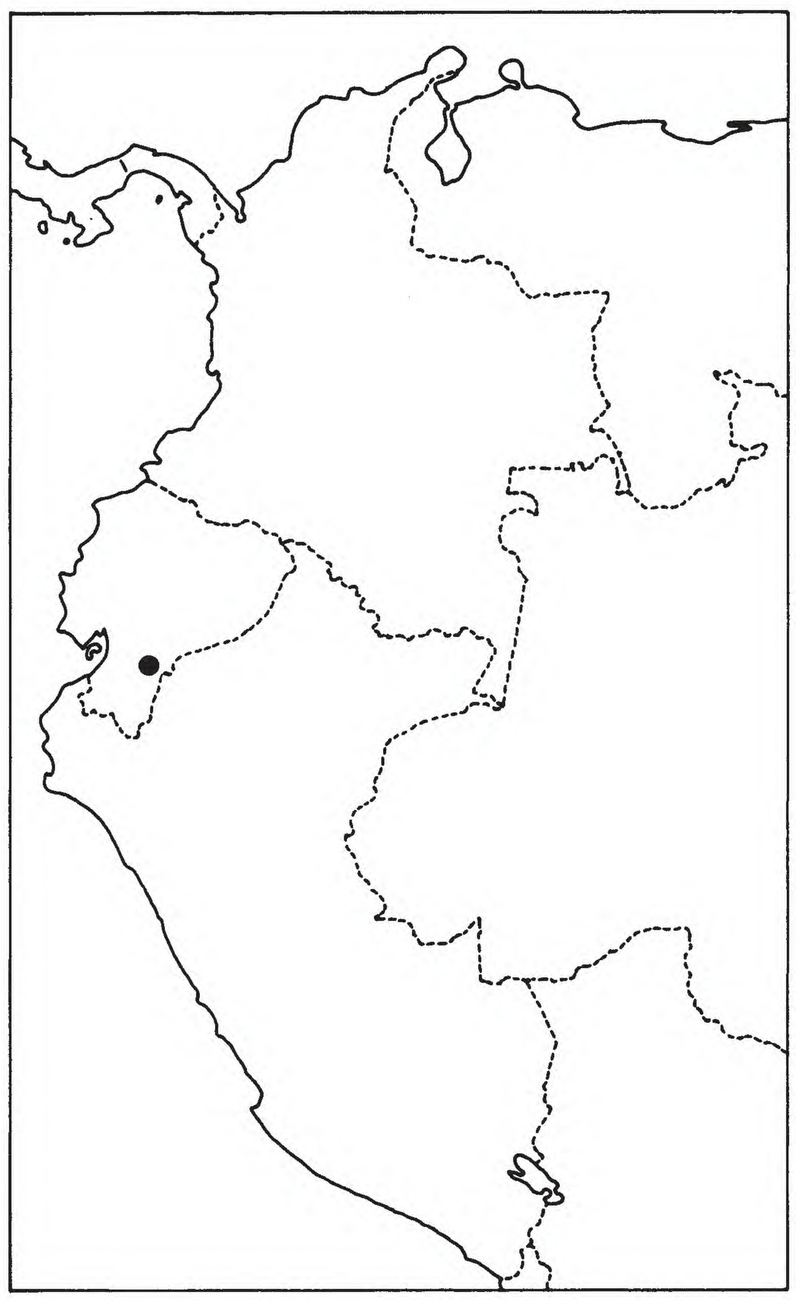
Masdevallia magaliana Luer & V.N.M. Rao, sp. nov.

Ety.: Named for Magali Portilla de Acaro, sister of José Portilla and wife of Ivan Acaro, co-collector of this species.

Species haec *Masdevalliae medinae* Luer & J.J.Portilla affinis, sed sepalis glabris flavescentibus majoribus minus connatis ad apicem oblique acutis cum caudis gracilibus longioribus, petalis infra medium crassicallosis et labello oblongo tenui differt.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 3-4 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, 11-14 cm long including the petiole 3-4 cm long, the blade elliptical, subacute, 2-2.4 cm wide, cuneate below into the petiole. **Inflorescence** a solitary flower borne by a slender, erect peduncle 11 cm long, with a bract near the base, from low on the ramicaul; floral bract tubular, 10 mm long; pedicel 15-20 mm long; ovary 5-7 mm long; **sepals** yellow, glabrous, the dorsal sepal suboblong, concave, 30 mm long, 12 mm wide expanded, 3-veined, connate to the lateral sepals for 12 mm to form an ovoid, sepaline cup, the apex rounded, abruptly contracted into a slender, yellow tail 4.5-5 cm long, the lateral sepals oblong, oblique, 27 mm long, connate 10 mm, each 12 mm wide, 3-veined, the apices obliquely short-acuminate, contracted into slender, yellow tails similar to that of the dorsal sepal; **petals** white, cartilaginous, more or less triangular, 6 mm long, 2 mm wide, the apex narrowed and bidentate, the labellar margin thickened with a longitudinal carina produced into a large, thick, descending process; **lip** white, finely dotted with purple at the apex, oblong, thin, 7 mm long, 3 mm wide, the apex truncate, with a small, purple, midline callus, the disc essentially featureless, the base obtuse, thickened, hinged beneath; **column** white, semiterete, with a thin, purple margin, 5 mm long, the foot 4 mm long including a free, incurved extension.

ECUADOR: **Morona-Santiago**: Cordillera del Condor, Manchinaza, alt. ca. 1500 m, collected by Hugo Medina and Ivan Acaro, cultivated by Ecuagenera in Gualaceo, and subsequently flowering in Wilmington, DE, 18 May 2005, *M. Rao 182* (Holotype: MO), C. Luer illustr. 20929.



This species was collected in the Cordillera del Condor mixed with others, one of which flowered at Ecuagenera, and was described as *Masdevallia medinae* Luer & J.J.Portilla. Grown together at Ecuagenera, differences were noted by Malli Rao, who eventually flowered one he thought different in his collection in Wilmington, Delaware.

Masdevallia magaliana differs from *M. medinae* by a larger habit, and a larger, yellow flower minutely dotted with purple within, and with longer tails. The dorsal sepal is not deeply concave as in *M. medinae*, and the apices of the lateral sepals are obliquely short-acuminate instead of rounded. The differences of the petals and lip are not significant.

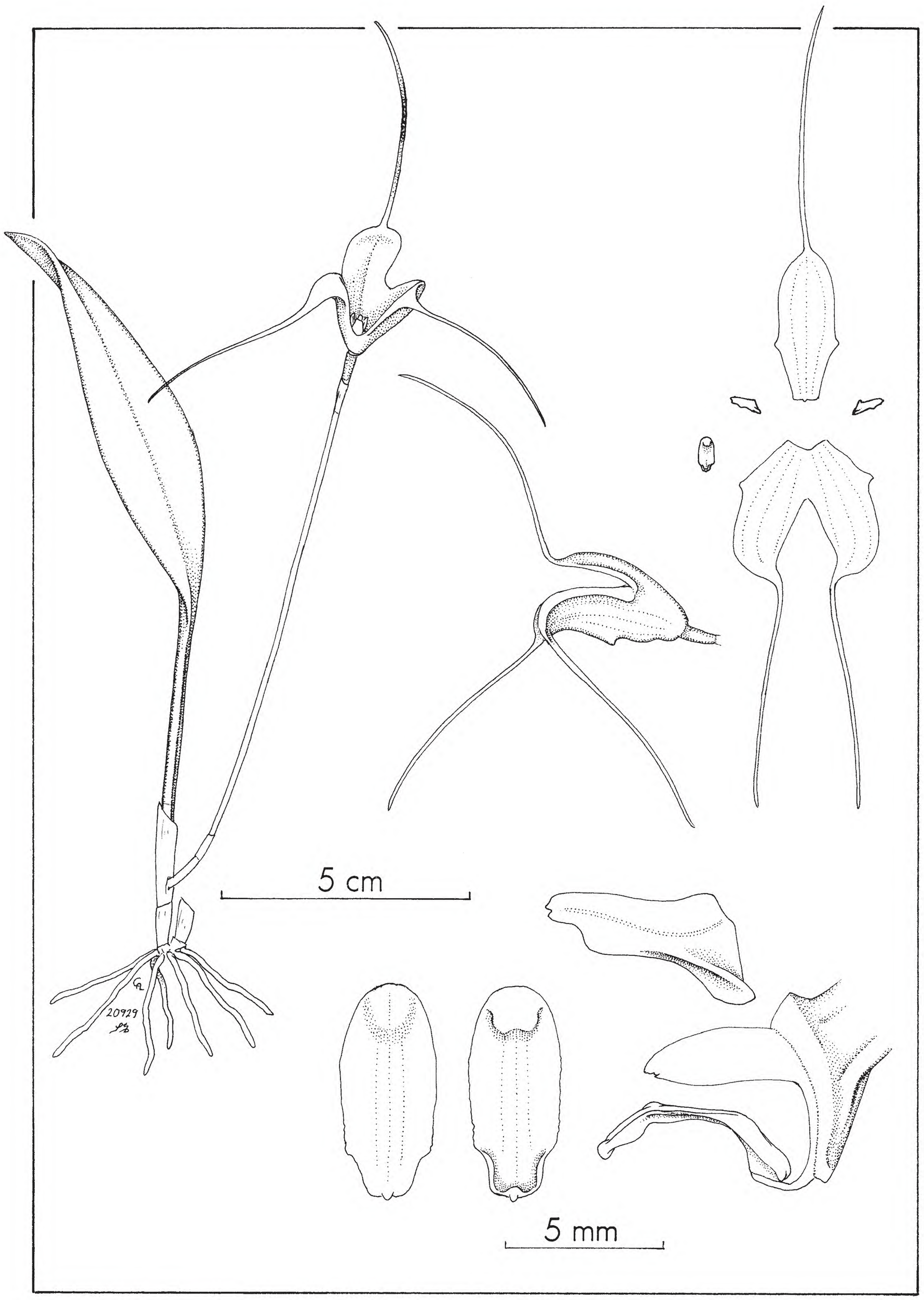


Plate 679. Masdevallia magaliana

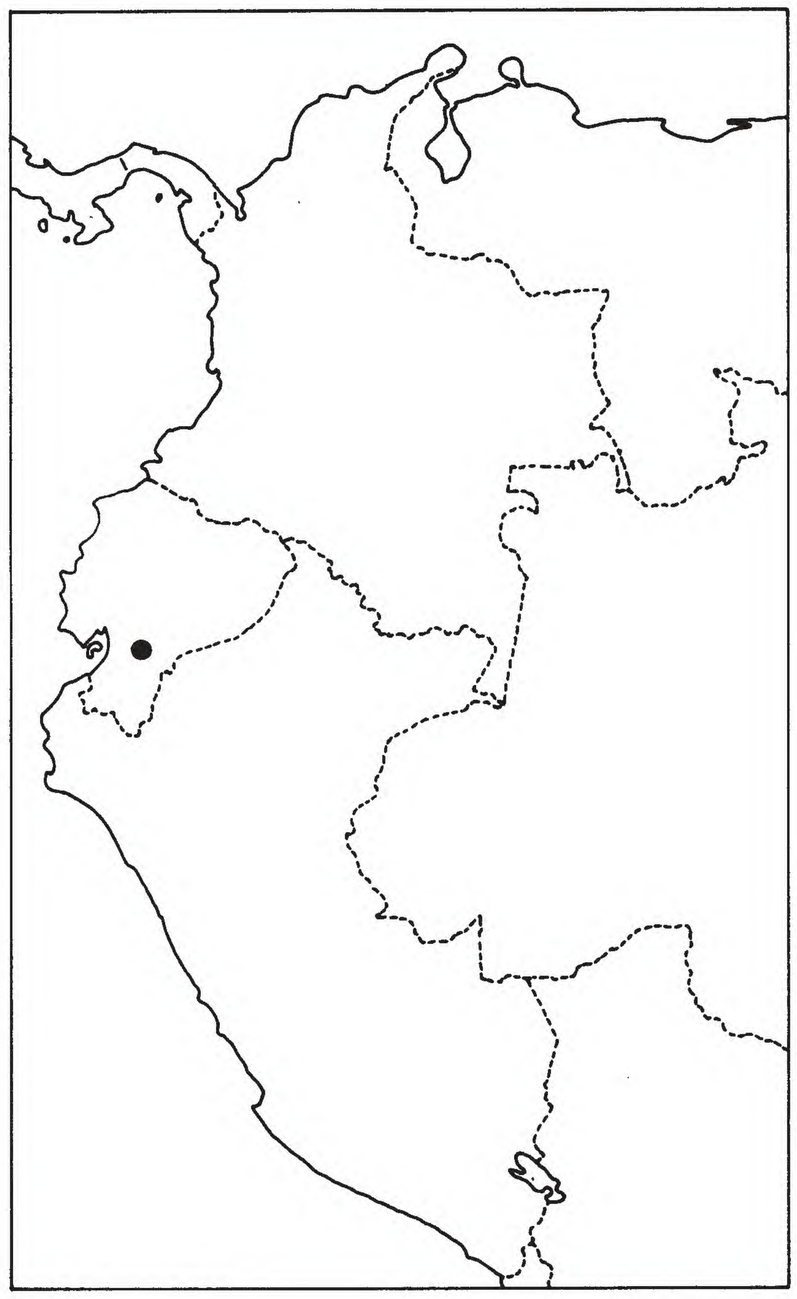
Masdevallia nijhuisiae Luer & Sijm, sp. nov.

Ety.: Named for Adriana Sijm nee Nijhuis, co-collector of this species.

Inter species *Masdevalliae* subsectionis *Caudatae*, pedunculo quam foliis longiore, sepalis flavis infra medium rubris glabris obtusis caudatis ad medium in cupulam connatis minus connatis, petalis oblongis cum processu basali retrorsi, et labello elliptico ad apicem decurvo calloso.

Plant medium in size, epiphytic, caespitose; roots slender. Ramicauls erect, stout, 1.5-2 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, 6-7 cm long including a petiole 1.5-2 cm long, the blade broadly elliptical, obtuse, 2-2.2 cm wide, cuneate below into the petiole. **Inflorescence** a solitary flower borne by a slender, erect peduncle 10 cm long, with a bract near the base, from low on the ramicaul; floral bract tubular, 10 mm long; pedicel 22 mm long; ovary 6 mm long; **sepals** glabrous, yellow, suffused with red in a broad band below the middle, the dorsal sepal broadly obovate, concave, 22 mm long, 15 mm wide, 5-veined, connate 13 mm to the lateral sepals to form an obovoid, sepaline cup, the apex rounded, abruptly contracted into a slender, rose colored tail 3 cm long, the lateral sepals ovate, oblique, 22 mm long, 12 mm wide, connate 10-11 mm, each 3-veined, the apices obliquely obtuse, contracted into slender tails 2.5 cm long, similar to that of the dorsal sepal; **petals** white, cartilaginous, more or less oblong, broader below the middle with a triangular, retrorse process, 6 mm long, 2 mm wide, 4 mm wide at the base, the apex rounded or obscurely lobulate, the labellar margin slightly thickened to the base of the process; **lip** dark rose, oblong, thin, 5.5 mm long, 2.5 mm wide, the apex contracted into a narrow, decurved lobule with a midline callus, the disc shallowly concave below the apex, thickened at the base, hinged beneath; **column** red, semiterete, 4 mm long, the foot 3 mm long including a free, incurved extension.

ECUADOR: **Azuay**: Nudo del Portete, road to Jima above Cumbe, alt. 3300 m, 27 Aug. 2004, collected by Adriana Sijm et al., flowered in cultivation, Oct. 2005, at Orchideeënkwerkerij, Venhuizen, the Netherlands, *T. Sijm 25014* (Holotype: MO), C. Luer illustr. 20987.



This species was collected at a high altitude in southern Ecuador mixed with *Masdevallia corderoana* Lehm. & Kraenzl. Until now, only one plant of *M. nijhuisiae* has flowered. It is distinguished by a short, wide leaf, and a single yellow flower with the sepals slender-tailed and connate to near the middle. Within, the sepals are suffused with a broad, red band just within the sepaline cup. A triangular callus of the petals extends backward. The lip is oblong with the tip contracted into a deflexed lobule.

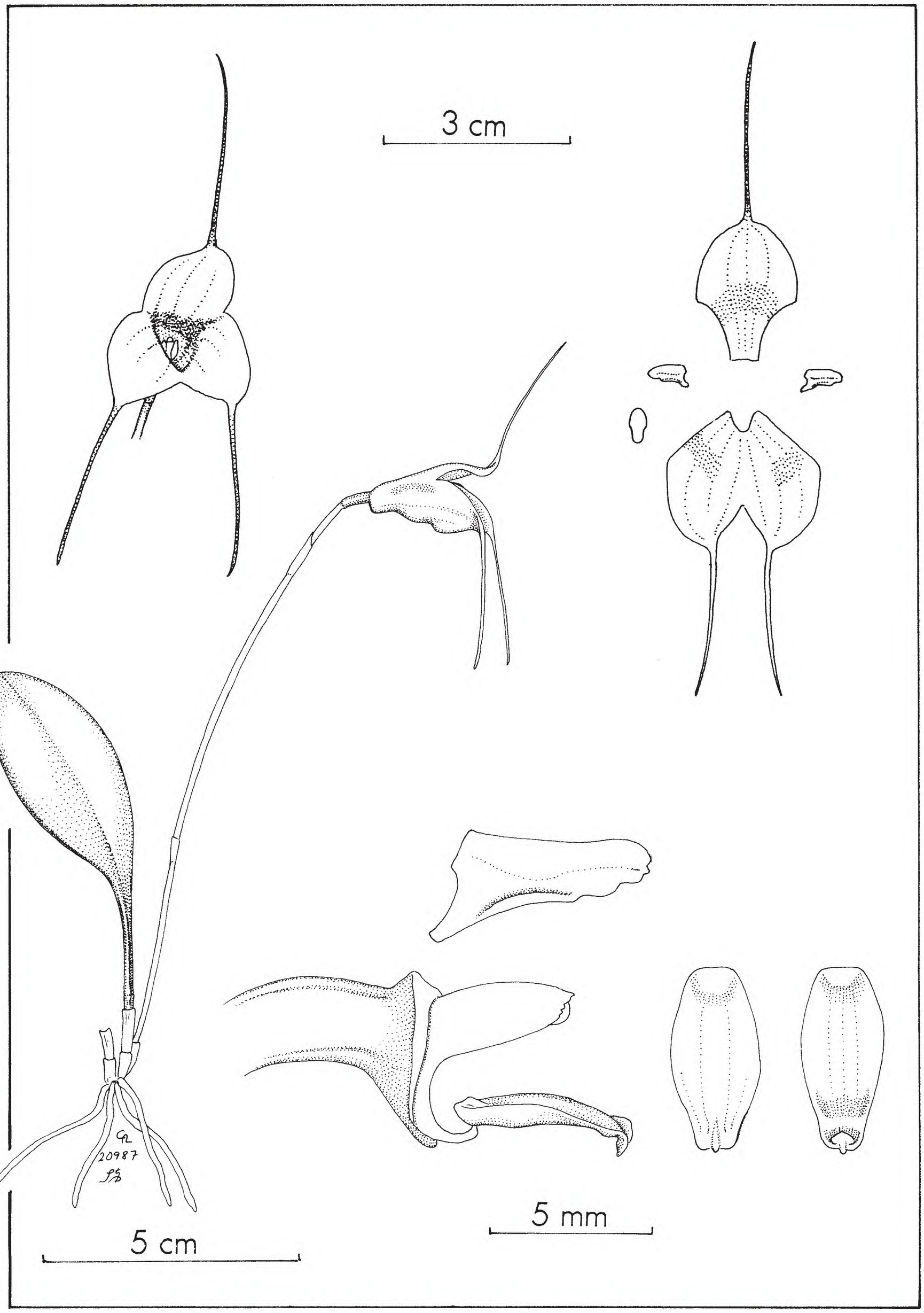


Plate 680. Masdevallia nijhuisiae

Spilotantha ferrusii Luer, sp. nov.

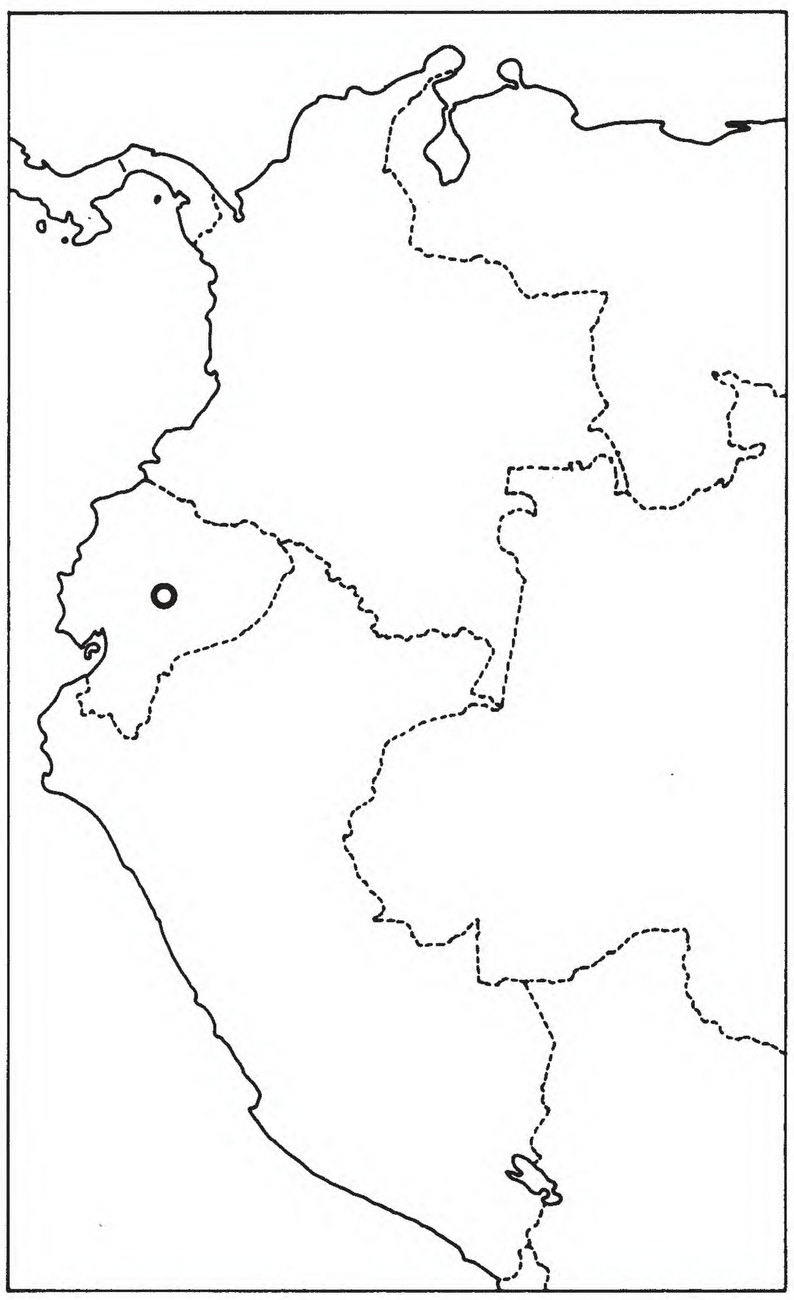
Ety.: Named for Mario Ferrusi of Fenwick, Ontario, who imported and cultivates this species.

Inter species *Spilotatanthae* Luer, planta grandis, racemo erecto laxe multifloro, ovario non cristato, sepalis atrobruneo maculatis intus sparsim longipubescentibus, sepalo dorsali profunde concavo, petalis acuminatis sparsim longiciliatis, et labello pandurato marginibus lateralibus ad medium incurvis.

Plant large for the genus, presumably epiphytic, caespitose; roots fleshy. Ramicauls erect, stout, 3-4 cm long, enclosed by 2-3 loose, tubular sheaths. **Leaf** erect, coriaceous, 13-16 cm long including a petiole 4-5 cm long, the blade elliptical, acute, 2.5-3.5 cm wide, cuneate below into the petiole. **Inflorescence** a nearly simultaneously several- to many-flowered raceme 10-17 cm long, borne by an erect peduncle 11-15 cm long, with a bract below the middle, from low on the ramicaul; floral bract infundibular, slightly inflated, 5 mm long; pedicel 5 mm long; ovary 3 mm long; **sepals** sparsely long-pubescent within, the dorsal sepal dull green, marked with spots and transverse bars in dark purple-brown, suborbicular, broadly rounded, deeply concave, 9 mm long, 9 mm wide unexpanded, 3-veined, connate 3 mm to the lateral sepals to form a shallow tube with a rounded chin, the apex contracted into an ascending, slender tail ca. 12 mm long, the lateral sepals yellow toward the base, white toward the tip, marked with brown and transverse bars, oblong, concave basally, 12 mm long, 3 mm wide, connate 2 mm, 3-veined, the apices subacute, contracted into slender, descending tails 17 mm long, similar to that of the dorsal sepal; **petals** translucent white, originating from the middle of the column, thinly cartilaginous, elliptical, acuminate, acute, the margins sparsely long-fimbriate, 3 mm long, 2.25 mm wide; **lip** white, yellow toward the apex, pandurate-oblong, 4.5 mm long, 2 mm wide, the apex rounded, the sides thick and incurved medially with the edges meeting in the middle, concave below the involuted margins; the base cordate, hinged beneath; **column** semiterete, 4 mm long, the foot 2 mm long including a short, thick, incurved extension.

ECUADOR: Without collection data, obtained from Ecuagenera, Gualaceo, Ecuador, flowered in cultivation in Fenway, Ontario, Canada, Mar. 2006, *M. Ferrusi s.n.* (Holotype: MO), C. Luer illustr. 21002.

Superficially similar to *Spilotantha polysticta* (Rchb.f.) Luer and its many relatives, this species differs in all the floral parts. The deeply concave, suborbicular, dorsal sepal and twice smaller lateral sepals are marked in dark brown and sparsely long-pubescent within, each trichome being mounted upon a minute pustule. The apex of the sparsely fringed petals is acute and acuminate. The lip is oblong and pandurate, caused by an inversion of the margins that meet near the middle, very unlike any other member of the genus.



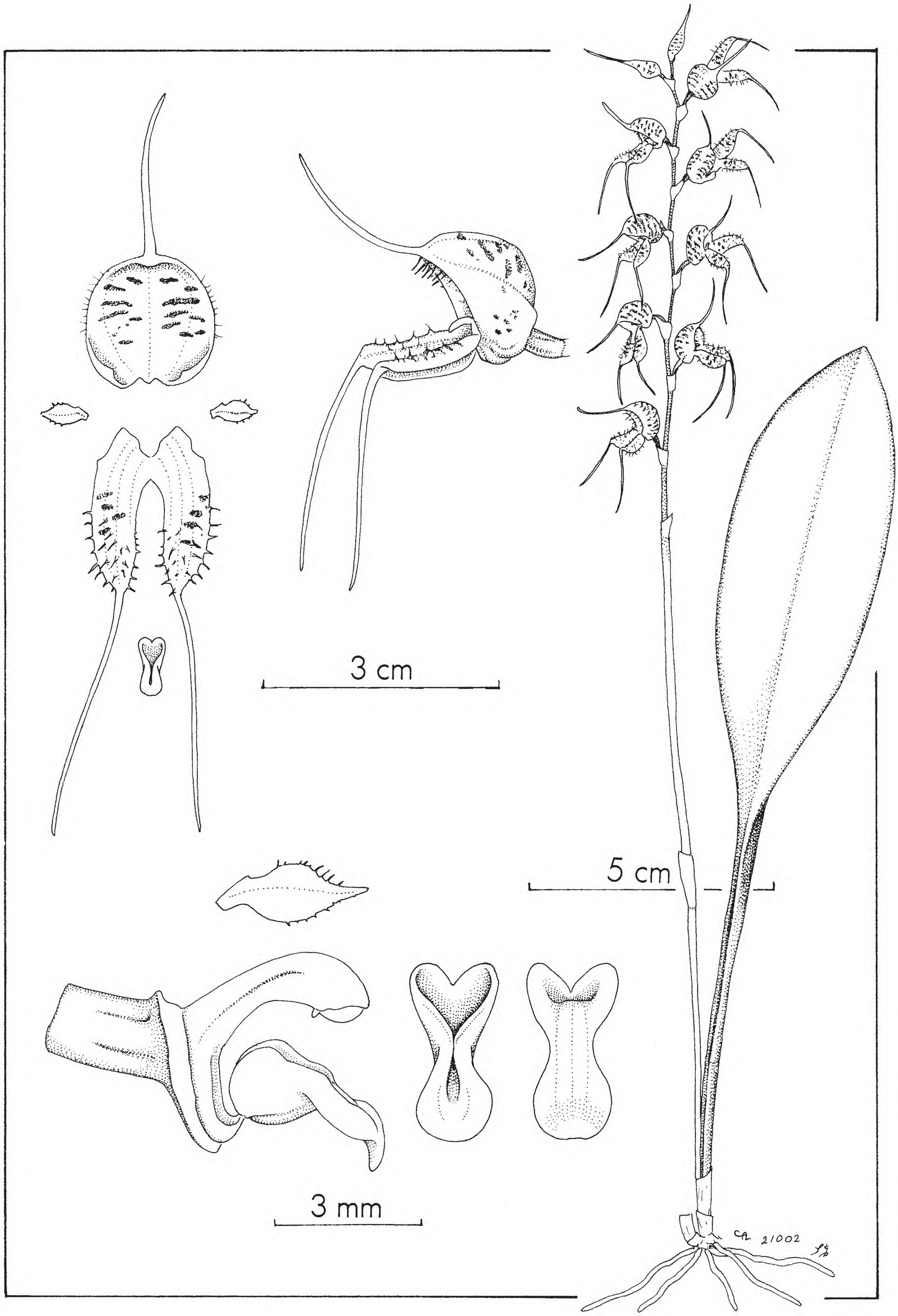


Plate 681. Spilotantha ferrusii

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